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THE FUNCTION OF THE STATE HOSPITAL AS AN EDUCATIONAL AND SOCIAL AGENCY

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In selecting a subject which might be of interest to a group of physicians concerned with hospital standards and with medical education, it has seemed that some consideration might well be given to a group of institutions which constitute one half of the hospital beds of the entire country, namely, the state mental hospitals. These institutions deal with a field of medicine which has developed rapidly during the last quarter century and which has become more and more clearly recognized as closely related to general medicine and to the other specialties. Furthermore, they are of interest as being predominantly public in ownership and operation, less than 2.5 per cent of the mentally ill of the entire country being cared for in private hospitals.

Although instances of mental disorder have been recorded from the dawn of history, and although this form of disease was the subject of consideration by Hippocrates and Galen, during the dark ages, the middle ages, the Renaissance and even a large part of the modern period, the subject was considered to lie much nearer to the field of philosophy than to that of medicine. The victims of such disorders were either looked on as witches and executed or were classed, as in the early days of this country, along with drunkards and other types of so-called criminal. In the American colonies drunkards and paupers and the "furiously mad" were classified together not only in the same statutes but in the same kind of institutions; namely, jails. Those mentally ill who were not "furiously mad" were merely allowed to wander at large or were warned out from town to town. It is probably no exaggeration to say that much of the so-called stigma which exists in the care of the mentally ill today is a relic of this attitude of the early laws. It was not until 1773 that any of the colonies made official and public provision for the mentally ill in the establishment of a state hospital at Williamsburg, Va. Indeed, in the early 1840's, when Dorothea Lynde Dix started her astonishing career, a career which resulted in the establishment or enlargement of over thirty mental hospitals in this country, there were not over five public mental hospitals in existence in the whole of the United States. By 1870 the number had grown to fifty public and sixteen private hospitals, with a population of about seventeen thousand, and approximately ten thousand

admissions a year. Although an attempt was made to be humane and decent in the care given to these patients, the custody was essentially nontherapeutic in purpose, and the institutions were generally known as asylums; that is, places of refuge. Their growth since that time has been little short of staggering.

There are at present, according to the United States Census¹ (for 1938), over five hundred mental institutions in this country, among them one hundred and seventy-six state hospitals, two federal, twenty-six Veterans Administration, sixty-seven county and city, seven psychopathic hospitals and probably about two hundred and fifty private institutions of greater or less size. In the state hospitals alone the population at the beginning of the year 1938 was 424,028, and during that year there were in round figures 106,000 admissions, nearly 58,000 discharges and 31,000 deaths. The actual cost of maintaining these institutions during that period was over \$113,000,000, without regard to the cost of permanent construction or the loss to the community in the earning capacity of the patient. Of late there has been a rather rapid growth in the number of patients cared for in the mental hospitals of the United States, the rate per hundred thousand of general population having risen from 241.7 in 1923 to 361.7 in 1939, an increase of 45.5 per cent. This increase has naturally caused great concern in some quarters. Extensive building programs have been undertaken in several states, and a few have, under the economic lash, newly discovered the system of family care in use in one state since 1884 (Massachusetts) and developed at Gheel, Belgium, since the Middle Ages. Many factors are involved, among which the actual incidence of mental disorder in the community is only one. Among these factors may be enumerated, first, the attitude of the public toward the institution and toward mental disease in general; second, the existence of adequate facilities; third, the existence of laws which do not render admission to the institution unduly difficult or attended by public humiliation; fourth, the economic situation of the families or relatives; this often has a bearing both on the patient's commitment and his early removal from the institution before he is entirely self supporting. Other factors, such as the degree of urbanization and the proportion of elderly people in the community, must also be considered.

As to the types of mental disorder, the campaign against syphilis has unquestionably caused a reduction in the admissions for dementia paralytica. In the case of the alcoholic psychoses a considerable reduction took place at the onset of prohibition, but there has been a steady rise since 1921, with a result that we are now at approximately prewar levels (4.5 per cent of first

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1. Patients in Mental Institutions, 1938, Washington, D. C., Government Printing Office, 1941.

admissions). The most striking increase has taken place in the arteriosclerotic group, a group which has shown an increase in ratio which is almost fantastic; indeed, from 1912 to 1936 the rate grew from 7.7 to 49.0 per hundred thousand of general population over 40 years of age, an increase of 536 per cent!² It has been well demonstrated that the liability to develop mental disease increases very rapidly after the age of about 50 and indeed that the incidence of mental disorder roughly parallels the mortality curve. The proportion of aged in the population is showing a rather rapid rise. From 1900 to 1935 it rose from 4 to 6 per cent (persons over 65), and it is estimated that by 1980 approximately 14 per cent will be in the upper age bracket. As a result, an increase in the senile and arteriosclerotic groups is fully to be expected. What effect the present war will have on the incidence of mental disorder cannot yet be predicted. The experience in England has indicated no substantial change in the admission rates to mental hospitals so far, but it is altogether too early to say what the ultimate effect of a total war may be on the mental health of any nation.

It is needless to point out that different states have different standards. This fact is well illustrated by the statistics relative to mental hospitals in various states. The effect of low appropriations, of the backwardness of legislatures in furnishing facilities and of the varying methods of admission is well illustrated, for example, in certain statistics. The average annual cost of maintenance per capita in 1938 was \$297.13, with variations from \$427.86 (Massachusetts) and \$411.65 (New Jersey) to \$117.82 (Kentucky) and \$146.75 (Mississippi). The average number of patients per hundred thousand of general population was 344.3, the greatest being 544.8 (New York) and 541.1 (Massachusetts), the least 179.1 (New Mexico) and 183.2 (Idaho). The crowding (average 9.4 per cent) ranges from 31.8 per cent (Missouri) to an excess of beds of 15.9 per cent in Rhode Island. Finally, the number of patients per employee (average 5.7) varies from 3.2 (District of Columbia) to 11.4 (Idaho).

METHODS OF ADMISSION

Reference has been made to the methods of admission to state hospitals. It is interesting to note that until 1872 admission to mental hospitals was about as simple as to any other institution. This was undoubtedly as it should be, and, as a matter of fact, abuses were practically unknown. In 1867 the famous case of Mrs. Packard received much attention in Illinois, with the result that a wave of legislation requiring mandatory jury trial swept over the country.³ It was alleged that many patients were, to use the colloquial phrase, railroaded, and that, in order to safeguard the occasional individual against such a fate, trial by a jury was necessary. Probably little argument is required to the effect that the haling of a mentally ill person into a criminal courtroom before a jury of laymen with a public recitation of the symptoms is humiliating to the family and psychologically most painful and harmful to the patient. I am glad to say that nearly all states have retreated from this extreme and barbarous state of affairs, the latest jurisdiction being the District of Columbia. Two states, Mississippi and Texas, still require a jury trial,

in the latter state only if the patient is to be retained in the hospital over ninety days.⁴

All states but fourteen and the District of Columbia provide for some form of voluntary admission, although several of the states which have such laws on the books do not use them for one reason or another. The desirability of permitting a patient to enter a hospital without adjudication should be obvious and has been to most of the progressive jurisdictions. In eighteen other states some temporary or emergency admission, without any form of court order, is permissible. This is an extremely important point. In most states the form of adjudication is relatively informal and at least is taken care of in the absence of a jury and in chambers if a judge has to enter the proceedings. The fear of railroading is one of those bogies which dies hard. There is no reason why any such fear should exist provided adequate inspection and supervision of the mental hospitals of a state is provided for by law in the form of a department of mental diseases or some supervisory body of that nature. So far only one state, namely Pennsylvania, has made sufficient progress to strike out the obnoxious words "insanity" and "lunacy" from its law relating to the mentally ill. It is an unfortunate fact that a recent study showed that 64 per cent of the patients taken to mental hospitals are still taken there by the sheriff or police and that 29 per cent are held in jail pending such transportation. Thus we can see that in spite of the advances which have been made in the standards of mental hospitals the legal procedures have lagged considerably behind what is best for the patient. For those who are interested in the standards and the practices in the various states, mention may be made of the Study of the Public Mental Hospitals in the United States 1937-1939, published in 1941 by the United States Public Health Service as supplement 164. This study reports the work of the Mental Hospital Survey Committee, a joint agency established in 1936 by the American Psychiatric Association, the National Committee for Mental Hygiene and the United States Public Health Service, which has made a survey of most of the mental hospitals in the United States. The study is an extremely valuable collection of reliable data compiled by a disinterested group.

DEVELOPMENT OF PSYCHIATRY

In the period during which hospitals have been developing in size and in facilities, psychiatry has been developing as a specialty of medicine. In the early days the members of the asylum medical staff were looked on askance by the general medical profession and were considered as being out of the stream of general medicine. It was not until the turn of the present century that psychiatry as a separate discipline really began to take shape, and even then the psychiatry was essentially the institutional variety. With the epoch making work of Freud, however, the relationships of psychiatry to the neuroses (previously thought to belong in the field of the neurologist), to the behavior disorders of children, to the delinquent behavior of adults and, indeed, to the minor difficulties of everyday life, as well as to various types of physical manifestations of emotional conflict, began to be recognized. Interest in the treatment in the institutions was one of the first developments, but subsequently the outpatient departments developed, child psychiatry has made rapid progress, forensic psychiatry

2. Landis, Carney, and Page, J. D.: *Modern Society and Mental Diseases*, New York, Farrar and Rinehart, 1938, p. 141.
3. Deutsch, Albert: *The Mentally Ill in America*, Garden City, New York, Doubleday, Doran & Co., 1937, p. 423.

4. Kempf, Grover A.: *Laws Pertaining to the Admission of Patients to Mental Hospitals Throughout the United States*, supplement 157, Public Health Reports, Government Printing Office.

has been recognized as a specialty, and even more recently we have come to hear much of psychosomatic medicine. Indeed, one of the refreshing developments in modern psychiatry is the recognition on the part of the internist, the surgeon and the practitioner of the various specialties that a very fair proportion of the complaints which are brought to him for care are primarily psychogenic and due to the emotional conflicts of the patient rather than perhaps cases for drugs or for operative procedures.

With these developments has come a recognition that the staff which allows only one physician to 400 or 500 patients is hopelessly inadequate. There has also come recognition of the need of training, of the need of medical libraries and the development of the various auxiliary services, such as clinical psychology, nursing, occupational therapy and social work. In the medical schools an increasing interest has been taken in the presentation of psychiatry to the students as something which is living and intimately related to general medicine, rather than a freakish specialty instruction in which has to be endured. The American Psychiatric Association, through the chairman of its Committee on Psychiatric Education, Dr. Franklin G. Ebaugh, and with the assistance of the Rockefeller Foundation, has accomplished much in the postgraduate training of physicians and in the training of medical students. Courses in medical schools have been substantially increased in length and in the variety of the problems presented to the students, with the result that the present day medical graduate has a far better grasp of the possibilities of psychiatry than did his fellow of twenty-five years ago.⁵ Progressive mental hospitals have recognized that those trained in them are not the only ones who profit. The value to the hospital of maintaining a teaching program is reflected in the attitude of the senior members of the staff and indeed, in the entire personnel of the hospital, with the result that the patient benefits.

At present eighty state hospitals have been recognized and approved by the American Medical Association as suitable institutions for residencies in psychiatry. This has certain corollaries not only in the physical equipment of the hospital but in the numbers of personnel and their qualifications. It is the hospitals which carry on an active training program for the benefit of young and well trained medical graduates which are in a position to render the best service to their patients. That, after all, is the fundamental reason for existence of any hospital or hospital function. The interest in training procedures was vastly stimulated by the establishment of the American Board of Psychiatry and Neurology in 1934. This board, which certifies specialists in psychiatry and neurology, scrutinizes closely the type of institution in which the applicant has had his psychiatric training. No longer is it sufficient to give the new doctor his keys and tell him to "make rounds"; active instruction and guidance are now required in order that the full benefit of the wealth of clinical material in the state hospital wards may be realized. This scrutiny in itself has done much to stimulate the hospitals to improve their standards of instruction of junior staff members.

At one time many mental hospitals had training schools for nurses, but, on account of the activities of some of the national nursing associations, many of these

training schools had been forced out of existence when the present emergency arose. At the present time hospitals are being encouraged to reestablish schools in order to meet the demand for nurses. Many of the better hospitals, which were more firmly endowed financially, have continued their training schools; as a matter of fact there is every reason why the graduate of a training school in an amply equipped mental hospital should in many ways be a better nurse for her experience with mental patients than the one who has had experience only in a general hospital. In fact, the tendency is growing for the general hospital training school to require affiliation with a mental hospital as part of its course. In addition to training medical students, residents, clinical psychologists and nurses, a number of hospitals are utilized in connection with the training of social workers, occupational therapists, dictitians and theological students. The value, indeed, of the recognition by the clergyman of the early symptoms of mental disorder and the need for treatment by a psychiatrist is being widely recognized today in theological schools. With the growing interest in the mental hygiene aspects of teaching, the facilities of the mental hospital might well be made available to teachers' colleges. Likewise, as a scientific approach to the problems of delinquency gains momentum these institutions may well take a part in the training of police.

STANDARDS

Some of the standards for mental hospitals which have been set by the American Psychiatric Association and are today generally recognized may be briefly considered. These standards have been set up as a result of many years of experience of conscientious state hospital administrators. That they do not receive universal acceptance is unfortunately the case. They are, however, approximated by the more progressive states, and, indeed, the number of states which fall lamentably below these standards is, fortunately, fairly small. The first qualification, which might well be considered by some states, which shall be nameless, is that the chief executive officer must be a well qualified physician, an experienced psychiatrist, whose appointment and removal shall not be controlled by partisan politics. As a corollary, all the persons employed at the institution ought to be subordinate to him and subject to removal by him if they fail to discharge their duties properly. As a second corollary the positions of administration of the institution must be free from control of the purpose of partisan politics. It is peculiarly true of mental hospitals that every activity of the institution affects in some manner the welfare of the patients. It is for this reason that we find the requirement of a psychiatrically trained physician as head, the superintendent to have control not only of the medical care of the patients but of the general policies of the hospital, including purchases, the kitchens, the farm and other activities. In at least one state (Massachusetts) it is required that the superintendent shall be a diplomat in psychiatry of the American Board of Psychiatry and Neurology and that he shall have had four years of administrative experience in a mental hospital. In some states, however, it is sufficient that the superintendent shall be friendly with some influential politician, and there are instances of nonmedical heads of such institutions or cases in which the steward or purchasing officer is not appointed by the superintendent or is even coordinate with him. Dual or lay control of a mental hospital jeopardizes the welfare of the patients.

5. For a detailed study of this subject see: Ebaugh, Franklin G., and Rumer, Charles A.: *Psychiatry in Medical Education*. New York City. Commonwealth Fund, 1942.

As for staff (the proportion of physicians to total patients), there should be not less than one to one hundred and fifty, in addition to the superintendent, and to the number of patients admitted annually not less than one to forty. There must be dentists, a staff of consulting specialists, an organized medical staff, suitable working facilities for the staff and carefully kept clinical histories. Suitable classification of the patients is, of course, essential, as is the existence of a laboratory, x-ray apparatus, a working medical library and suitable treatment facilities. The existence of outpatient clinics and an adequate force of trained social workers are called for, as well as an adequate nursing force of a proportion not less than one to eight. Such facilities are expensive, but in the long run they are a good economy to the state, for they mean early and adequate treatment of the patient, with corresponding likelihood of early restoration to the community and to a useful economic place.

OTHER FUNCTIONS

I have reviewed briefly some of the functions of the state mental hospitals, with particular reference to education and to the welfare of the community. It would be interesting, if time permitted, to consider some of the other possible functions of a state hospital. The state hospital should serve as a focus of the mental hygiene activities of the entire community. Nothing has done more, perhaps, to break down the local distrust of a hospital than the existence of outpatient clinics, both for adults and for children, maintained by the hospital, as is the case in many states. Still another function which has been extremely valuable has been the rendering of service to schools in examination of retarded or problem children, and to the court, under the Briggs Law of Massachusetts and the Desmond Act of New York, for the examination of persons coming up for trial. In the latter activity the hospital staffs have an excellent opportunity not only to learn much of the reasons for adult behavior but also to interpret to the court and to the public a more reasonable and understanding attitude regarding what is generally denominated as crime. Finally, in speaking of educational facilities we should not forget that the existence of the state hospital and its entire history represent a chapter in the education of the general public in an attitude toward mental disorder which is one not of fear, not of distrust of the institution, of the psychiatrist and of the afflicted person, but one which recognizes mental disorder as an illness which calls for sympathy, encouragement, understanding, and intelligent and trained treatment.

A Game with Ideas.—The teacher and the student likewise play a fascinating game with ideas in the classroom. The teacher rises to his feet to expound noble ideas which it took him years to discover. The student respectfully commits them to his notes. The teacher urges the student to become acquainted with other noble principles which are to be found in the textbook. The student faithfully endeavors to ascertain which of the two sets of principles is most likely to be favored on the tests. Toward these he exhibits, for the time being at least, an unmistakable attitude of devotion. But when the final examination is over he sells the textbook for enough cash to hitch hike home and kindly returns the ideas, as good as new, to the place whence they came. With respect the professor welcomes them home, imagining that they have been somewhere, and sets about giving them new clothes for another journey of the same kind.—Terry, Paul W.: *Some Reflections on Ideas*, *Assn. Am. Coll. Bull.* 26:257 (May) 1940.

THE WAR, THE COLLEGES AND FEDERAL AID

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The war has brought the universities and colleges of the United States face to face with serious problems. Student enrolments in the graduate and professional departments of many institutions, with the exception of medical schools, have seriously declined. With the downward extension of the age groups, as provided in recent amendments to the Selective Service Law, the junior and senior classes in undergraduate departments are certain to be similarly affected next autumn. And many prospective freshmen will doubtless find jobs in industry and give up the idea of entering college until after the war, which means that most of them will never enter at all.

It is true, of course, that efforts will be made—they are already being made—to maintain enrolments by relaxing the normal requirements for admission, by carrying on instruction through the summer and by shortening the time required for graduation. In some coeducational institutions the quota of women students is being raised above the usual limitation. These endeavors to keep the student body up to par may be in some measure successful; but if educational administrators are wise they will prepare for a substantial reduction in the attendance at their institutions during the next couple of years.

In the endowed institutions this means a serious decrease in the revenue from tuition fees at a most inopportune time, namely, when income from endowment has dropped by reason of the decline in interest rates and when the burden of increased taxes is making it more difficult to get financial help from the alumni. The state universities are more fortunate, for the moment at least, in that they are not dependent to any large extent on student fees or endowment income, but if their enrolments fall off it is not improbable that the state legislatures will feel justified in trimming educational budgets accordingly. Heavy demands for other expenditures, owing to the war effort, will encourage them to do this.

In any event the colleges should make up their minds to tighten their belts for the duration, and this is not going to be easy to do. Buildings have to be kept up, and it is costing more to maintain them than formerly. Wages of janitors, groundsmen, clerks in the administrative offices and other college employees are being forced skyward by competition for workers from outside. Likewise the cost of food in the college dining halls and of service in the dormitories is steadily rising. Laboratories cannot function without supplies, and these are now costing more. The size of the instructional staff will doubtless be reduced by the calling of some teachers into the defense services, and savings can be expected in that direction; but it is unlikely that this retrenchment in faculty payrolls will go very far toward solving the whole problem. Higher education, like everything else, is going to be at higher cost.

Caught in this dilemma between rising outlays and declining income, the colleges will be sorely tempted to follow the procession of supplicants to Washington.

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They will feel that the federal government ought to recognize their plight and do something for them, either by an arrangement which would defer certain groups of students from induction or by grants of financial aid to tide them over. And why should not the federal government be asked to help the colleges by grants-in-aid? They are institutions of public welfare, and there is very little in the way of public welfare effort which the federal government is not being asked to subsidize in some way, direct or indirect. A few years ago these petitions were presented as a way of softening the hardships of an economic depression; today federal aid is being sought with equal urgency as a means of tiding over the dislocations of war prosperity.

The fact is that our people have been only too well schooled in the habit of lifting up their eyes to Mount Sinai on the Potomac—the hill from which cometh their aid. There was a time, not so long ago, when the states and local communities expected to pay for their own public welfare enterprises, including their educational institutions, and to be content with what they could afford. That day seems to have gone by. Even though the national government is now faced with the largest budget in all history, it will not be relieved from the importunities of those who want benefits for themselves in the name of maintaining the national morale.

STATE AID FOR SCHOOLS

If our institutions of higher education seek aid from the national treasury they will have both precedents and arguments to support them. Such assistance, if given, would simply be the culmination of what has been developing in the whole field of American education for a long time. The arguments supporting it are merely an extension of those which, for many years, have done service in relation to the public schools. Our first public schools, grammar schools they were called, began as community enterprises. They were wholly supported out of local taxes, and they received no other financial support until the opening of the West created a new problem.

In these new areas it became apparent that many of the pioneer communities, when left to themselves, either set up no elementary schools at all or provided very inadequate ones. Children on the frontier were growing up in illiteracy. Consequently the territorial and state governments in these areas found it necessary to make the establishment of grammar schools compulsory and often to provide money as a means of enabling the poorer settlements to comply with this requirement.

This, in due course, proved to be merely the onset of what grew into something approaching a nationwide policy. State aid to needy localities developed into state aid for all elementary public schools, then for high schools as well and finally in some cases for junior colleges on the basis of their average daily attendance. The original subsidies were defended as a means of "equalizing educational opportunity" as between richer and poorer communities; the newer practice of state-wide subsidization was not largely inspired by any such equalitarian philosophy but by a desire to lessen the load of taxes on real estate, especially on agricultural land. When schools have to be supported from local taxes, the property owner bears virtually the whole burden; but by state subsidies a part of the load can be shifted to the payers of income taxes, franchise taxes, inheritance taxes, sales taxes and other state

levies. It is not surprising, therefore, that the policy of state aid to local schools has had its greatest development in the agricultural states.

FEDERAL SUBSIDIZATION

The Constitution of the United States is silent with respect to public education. Its intent was to leave this responsibility to the states. And in large measure the states accepted this obligation until the economic depression of the recent thirties proceeded to break down the historical division of responsibilities between the federal and state governments. Literally billions of dollars were distributed by the national treasury to the states for all sorts of things and there seemed to be no reason why education, lower and higher alike, should not claim its share. Old arguments were brought forth to do new service, but in a higher range and on a wider scale. Federal aid to the universities and colleges began to be urged, and is still being urged, as a means of equalizing educational opportunity, not merely as between states or communities but as between individuals, by giving every young man or woman, rich and poor alike, a chance to secure a college education.

Momentarily, this campaign for a general subsidization is in eclipse as the result of the pressure on the federal treasury for defense expenditures; but its place has been taken by more restricted proposals tied up with the national emergency. To the extent that the shortening of the usual time required for graduation has put the colleges to some greater expense, it is now argued that the federal government should assume the extra cost, whatever it is. Likewise, if the colleges keep functioning right through the year, this will obviously be hard on those students who have expected to pay their way, in part at least, by earning money during the long summer vacation. So it is suggested that the federal government come to the aid of such students by giving them money or by lending it to them without interest.

Of course there is much to be said for emergency aid along the foregoing lines. But the danger is that any plan of subsidization devised for the emergency will be continued as a permanent feature of federal finance long after the emergency has passed. There are few things more tenacious than governmental subsidies once you begin the practice of giving them for any purpose and under any circumstances.

COMPETITIVE SCHOLARSHIPS

This idea of asking Congress to underwrite a college education for every one would have seemed strangely fantastic a generation ago, but there can be no blinking the fact that it has gained support from many influential quarters in recent years. Two chief arguments are used in its support—one educational, the other financial. Compressed into a sentence or two, the educational argument runs this way: If the country is to remain a democracy it must maintain the principle of the *carrière ouverte* by giving all its young men and women an equal opportunity to become leaders. This it can do only by making higher education a possibility, not merely for those whose parents can afford it, but for all qualified young men and women irrespective of their economic status.

The objective is to steer more students into the universities and colleges, when there are already more of them there than deserve to be. This is proved by the fact that about half of those who enter never stay

to graduation, while a sizable proportion of those who do become graduates are still uneducated. When they forget what they have memorized, not much will be left. Many of them, after four years of immersion in the collegiate atmosphere, remain illiterate to a degree, even with a degree. They are the handiwork of higher education—but higher than what? Higher, in some cases, than their intelligence warranted.

The slogan "equal opportunity for all" is a popular one. As applied to college education, however, it merely reduces a complicated problem to engagingly simple terms. Not all young people are able to profit equally by equal opportunity. Every teacher knows that many of them reach the point of diminishing returns in formal education before they arrive at the usual age of college entrance. For such persons the best education is vocational training, either for a job or at one. Too many young Americans are already sleeping through lectures when they ought to be awake at a work bench.

The proposal to use federal money in order to extend opportunities for a college education over a broader constituency would not make this situation better. It puts all the emphasis on quantity—more colleges and bigger ones. What we need is emphasis on quality—fewer colleges and better ones. There is already lots of room in the colleges of the United States for every one who is qualified and willing to profit by what these institutions have to give. You will hear averments to the contrary, but it is nevertheless true that there is hardly a college in this country, from Tusculum to Tuscaloosa, which is turning away any meritorious applicants today. Most of them, as a matter of demonstrable fact, are actively campaigning for more students, especially for more male students, in the endeavor to keep their budgets balanced. They have "waiting lists," so they say; but in many cases these are lists of students for whom the college is waiting.

If federal aid is ever to be made available it should not be by aiding the colleges to attract more low voltage youngsters. The aid should be by way of competitive scholarships whereby any boy or girl of exceptional capacity but of slender means would be enabled to attend any college of his or her own choosing. Such students would help to raise the intellectual level of the student body. They should be freely permitted to make their own choice among institutions, for although many of them might choose to enter what educators sometimes designate as "second rate" colleges there is no college in the United States, however weak or poor, at which a bright, earnest student cannot get a good education if he sets out to do it. And by the same token there is hardly a college in the land, however rich and strong, at which a dull witted, lazy student cannot avoid getting one if he is so minded. It is the student rather than the institution that determines the worth of the educational process. That being the case, it is surprising that colleges, on the whole, give so little attention to their methods of instruction and so little to the selection of students who can profit by any instructional method.

REDISTRIBUTION OF WEALTH

The other argument in favor of federal aid to the colleges is financial. Federal subsidies are advocated as a measure of fiscal reconstruction—as part of a general plan for the redistribution of wealth and income. According to a recent publication of the National Advisory Committee on Education, federal aid would place

"a larger share of the tax raising responsibility on the level of government which . . . is in the best position to distribute its taxes equitably, efficiently, and with a view to their economic effects."

There, in one sentence, is the cloven hoof that betrays one type of sponsorship for greatly increased federal largesse to the states. The national government can levy high taxes on corporate profits, inheritances and individual incomes, thus obtaining huge sums of money which can be distributed "with a view to their economic effects." This, of course, is an ingratiating way of saying that the federal government should use its taxing power to compel a redistribution of wealth under color of promoting the interests of education. Much of the support for federal aid to higher education comes from those who care little about the purpose for which the money is being expended so long as it serves to take from those who have and give to those who have not.

But it does not often profit either men or institutions to accept what they have not earned. There is an Italian proverb which the colleges will do well to remember if they are invited to dip into the national treasury: *Dannoso è il dono che toglie la libertà* (Curséd is the gift that taketh away our liberty). For whatever may be hoped to the contrary, federal aid will inevitably lead to federal guidance, discipline, restraint and control. Those who hold the purse will wield the power. That must be the case, for it would be a negation of responsible government if public funds were permitted to be spent without control by the authorities who make the appropriations. Expenditures without control are bound to be wasteful, as every one knows; there is indeed no greater incentive to wastefulness than to let authorities, whether public or private, spend at their own discretion money which they have been at no pains to raise.

When any one argues, therefore, that the federal government could aid the colleges by subsidies without placing any constraint on their freedom, he is disregarding the lessons of experience in this field. We know only too well what has happened in the case of federal aid to the states in the matter of highways, public health and vocational education. At the outset the national authorities prescribed nothing more than the main objectives and the general standards. Then, little by little, the terms on which the subsidies could be obtained were defined with increasing strictness. In this connection it is significant that the National Advisory Committee on Education, which has been an ardent supporter of federal aid to education, recently urged that a revision of the federal statutes be made in order to "free vocational education from many burdensome restrictions imposed from federal sources" and to "end interference with local school administration."

THE OUTCOME

Federal subventions make for centralization of control, always and everywhere. Centralization of control, in turn, leads to an insistence on uniformity through the setting up of procedures which all are expected to follow. Howsoever excellent these procedures may be, they discourage experimentation and diversity. In the end there is apoplexy at the nerve center and paralysis at the extremities. The division of power and responsibility between the national, state and local governments in the United States is not a mere matter of geographic convenience. It is a democratic concept based on the proposition that power and responsibility should be widely decentralized as a safeguard to local

freedom of action. It is a concept which looks on differences of action and opinion as something to be encouraged, not repressed—and our universities exist in order that such differences may find a haven of tolerance. Today the world is moving at an alarming pace toward a regimented intellectual economy, a way of life in which there is no place for dissent or nonconformity. Even in Great Britain and the United States, where democracy is still holding its battlements, there are noticeable trends in the same direction.

Before listening to the suggestion that they balance their own budgets by more heavily unbalancing the national one, the colleges should consider whether they might not be accepting the deadly gift of Minerva, the wooden horse of Troy. The tradition of freedom which the endowed educational institutions of America have built up during three hundred years is a pearl of great price. It should not be surrendered, even though the alternative is near starvation. No doubt such a surrender will never be made by them wittingly. But there is some danger that it may be done without realizing what long range implications are involved. "Early and provident fear," as Edmund Burke once said, "is the mother of safety." Uncle Sam might prove to be a kindly overlord—but an overlord he would be all the same.

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WARTIME PROBLEMS OF THE PUBLIC HEALTH SERVICE

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The physicians of the United States face a task of historic importance. It is a rearguard action as one considers the net saving of life and decrease in suffering. It is in the front line of attack with regard to its potentiality to strengthen the arm of the fighting forces and speed the day of final victory.

One point must be made clear in the beginning: the Medical Corps of the Army and Navy have responsibility for the medical care of the personnel of the armed forces. The ratio of physicians to the strength of those forces must of necessity be larger than the ratio of physicians per thousand of the general population. The Public Health Service, working in partnership with the state health authorities, has responsibility for general health conditions of the whole remaining population—more than one hundred and twenty millions—even when the whole military and naval force is mobilized for all out final drive to victory. In addition to holding the lines against preventable disease, it is necessary for the public health profession, working in close harmony with the private practitioner, to build more strongly than ever before that condition of positive health without which our population can neither sustain itself in time of trouble nor attain the tremendous production required to supply our fighting forces and those of the United Nations with the munitions of war.

The Public Health Service also has many special problems arising out of the war. The load of clinical care in our twenty-nine hospitals mounts steadily with the constant increase in the Coast Guard and the merchant marine. The industrial hygiene service must

keep pace with the needs arising from high speed assembly lines, which will employ some fifteen million men and women within the year. Great Britain learned that it is urgently necessary to have the full time services of a trained industrial physician in every large plant. Less than one seventh of our workers have that service now.

St. Elizabeths Hospital will face demands beyond any in its history. The increase in the population of the District of Columbia is of phenomenal proportions; moreover, the hospital is required by statute to care for the mentally ill of both the Army and the Navy. New and urgent tasks have been laid on the research division of the Public Health Service, the National Institute of Health, to meet both industrial and epidemic hazards. Establishment of an Emergency Medical Service, under the auspices of the Office of Civilian Defense, obviously must be given first priority in the vulnerable areas. It is necessary to perfect every detail of these plans now. There will be no time when the bombs begin to fall.

Our greatest specific new responsibility arising out of wartime conditions, however, has been due to the vast shifts of population. Military camps, industrial expansion, new shipyards, arsenals and other reallocations of national power to war effort are turning villages to cities almost over night. Acute problems of sanitation, public health, including venereal disease control, hospitalization and medical care are created thereby.

We are all agreed that no effort should be spared in securing for the Army and Navy the medical personnel needed increasingly for the care of our soldiers, sailors and marines. The Procurement and Assignment Service, under the able chairmanship of Dr. Frank Lahey, provides the method of using to the best advantage the available physicians and dentists of the country. Every governmental agency is cooperating fully with that office.

It is clear however that, when army and navy needs have been met in full, a huge task remains for protection of the civilian population and for the smooth functioning of specific war responsibilities of that population. As regards the total number of doctors involved, public health is relatively a small specialty of medicine. Our best estimates show that the number of full time physicians employed in the federal, state and local public health work approximates three thousand five hundred. Another thousand qualified doctors are needed now to fill vacancies caused by the calling of reserve officers in states and localities to active duty and to meet new needs as previously indicated.

The numbers of men needed are far less significant than the kind and quality of men and their special training. Unlike the Army and Navy Medical Corps, who need men essentially for clinical service, only a fraction of the doctors needed now by the Public Health Service, and almost none of those needed by the state and local health authorities, can be drawn from the private practice of medicine and put to work immediately without intensive special training. Public health skill of any one type (venereal disease is a good example), and there are scores of specific illustrations, requires the capacity to translate a doctor's clinical knowledge of disease into a system of control that will not only check the disease in the individual but protect the community against it, and it is most important that he have the capacity to put that plan of control into operation.

It is, perhaps, not clearly understood that the men in the regular commissioned corps of the Public Health

Service are commissioned by the President and hold status of rank, pay and retirement on a parity with regular medical corps officers of the armed services. We select them with rigorous care and find it most profitable to train them ourselves in the specific field for which their capacities best fit them, using fully the special training centers of universities and other medical centers.

One problem which has not been met is that of medical care in the areas whose populations are recently swollen by the influx of population for both military and industrial establishments.

Our specific information comes from three sources: Since November 1940, at the request of the state health officers, we have been conducting a sanitary reconnaissance in the defense areas by sending in teams of physicians and engineers to obtain first hand intelligence of the needs and available health resources. In addition, the defense housing projects administered by the Federal Works Agency have enlisted the Public Health Service in an advisory capacity, as proper housing is closely associated with the provision of basic sanitary facilities in these newly overcrowded areas and where the shortage of doctors inevitably comes to attention. We have found by preliminary investigation that the facilities for medical care in most of these areas are very poor; that the situation could become alarming in the event of epidemics. Also the Army has requested civilian physicians for housing projects located near Army posts, as the Army physicians have their hands full in caring for military personnel.

A major part of the problem, of course, is that of distribution. An announcement made last fall in THE JOURNAL and to one thousand approved hospitals urged all physicians interested in practicing in defense areas to get in touch with the Public Health Service. About five hundred doctors answered. These were followed up by questionnaire on their qualifications. There is now a list of about three hundred physicians who have signified their willingness to move, usually with some preference as to locality.

By means of this list, plus the findings from additional surveys, it is hoped that physicians can be gotten into areas that greatly need them. Where it is desirable, the physician can rent quarters in a defense housing project.

In supplying medical personnel for defense areas, the problem of licensure has already caused confusion and delay. These difficulties often could be overcome by prompt granting of reciprocity to qualified physicians desiring to transfer from one state to another, or by temporary revocable licenses pending qualification. I hope that the state boards of licensure will give serious attention to this matter with a view to speeding up the licensing procedure.

There are many competent physicians in the United States who have come to our shores as refugees. Many of these could be made immediately available for service in areas where the shortage is acute, if they could be licensed to practice. We should consider the possibility of combining self interest with hospitality and giving all these doctors who are qualified an opportunity to help meet the growing shortage of medical personnel.

It probably will be necessary for the public health schools to give shorter and more intensive courses to new medical recruits going into public health work. Some of the schools already have taken steps in this direction. I would venture to suggest also that the

medical schools of the country consider the possibility of intensifying their present courses in preventive and tropical medicine. A thorough knowledge of these subjects is a valuable asset to the large groups of recent medical graduates who will be going into the military and naval service, no less than a relatively small number going into public health service.

Because of the shortage of doctors, it will be necessary for various types of medical care to be diluted, for the doctor's time to be saved, by using in many routine technical tasks persons who are less well trained than those now engaged. This applies to laboratory procedures and to work in x-ray departments as well as to routines in the hospital wards and in the dispensaries and clinics. A great number of such technical personnel will need to receive intensive training.

Many thousands of nurses' aides are now being trained. Less attention has been given to the need for aides to technical personnel in other sectors. The need for them is none the less real.

This is total war; the civilian is at the front with the soldier. Civilian health and strength are as essential to victory as is the medical care of our armed forces. Needs are too urgent to permit half-way methods. Complete cooperation on the part of medical men throughout the country is the first requirement. By full use of every qualified doctor's ability, I am confident that the American medical profession again will meet effectively the supreme test. Public health takes on a new urgency. Heretofore we have sought health primarily for its value to the individual. Now we must attain it for the nation's security.

THE PRESERVATION OF HUMAN PLASMA

REPORT OF STUDIES WITH THE SULFONAMIDE COMPOUNDS

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Between August 1940 and January 1941 in New York City the Blood Transfusion Association, in cooperation with the American Red Cross, prepared 6,151 liters of liquid human plasma for England.¹ Of this amount 8.5 per cent was found to be contaminated, despite the use of merthiolate in the concentration of 1:10,000. Because of this finding and the observations of Novak² and other workers³ in the field an attempt was made to investigate further the use of the sulfonamides in the preservation of blood plasma.

METHODS

Three separate series of experiments were carried out. In the first, from 12.5 to 20 cc. of pooled human citrated (0.5 per cent) plasma was placed in sterile tubes to

Dr. A. R. Dochez supervised this study and gave many helpful suggestions.

The human plasma was obtained through the New York chapter of the American Red Cross.

Financial aid was given by the Blood Transfusion Association and the Medical Division of the National Research Council.

From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

1. Report of the Blood Transfusion Association Concerning the Project for Supplying Blood Plasma to England, Jan. 31, 1941, Blood Transfusion Association, 2 East 103d Street, New York.

2. Novak (footnotes 7, 9 and 12).

3. Harrington and Miles,⁴ Hunwicke,¹¹ Becart and Philippe.¹¹

which increasing amounts of various sulfonamide derivatives were added so that the final concentrations were 10, 20, 30, 60, 100 and 200 mg. per hundred cubic centimeters. Sulfanilamide and the sodium salts of both sulfapyridine and sulfathiazole were the compounds tested. Each drug was made up with sterile 0.85 per cent solution of sodium chloride into a 1 per cent solution; this was passed through a Seitz filter and the necessary amount was added to the plasma tube to bring about the drug concentration desired. Determinations

tion, was incubated at 37 C. while another set was kept in a refrigerator at 5 C.

Pour plate sampling was carried out weekly after thorough mixing, 0.1 cc. specimens added to 10 cc. of agar, or 10 per cent rabbit's blood agar in the case of the hemolytic streptococcus, being used. Finally, the pour plates were incubated for forty-eight hours or longer before being evaluated, since it has been our experience that under these conditions growth may not appear before forty-eight to seventy-two hours. The

TABLE 1.—Tubes Stored at 37 C. (First Series of Experiments)

Drug Concentration, Mg./100 Cc.	Organism: Staphylococcus Aureus						Hemolytic Streptococcus					Bacillus Lactis Aerogenes			
	Inoculum: 17 Colonies/Cc.						8 Colonies/Cc.		15 Colonies/Cc.			16 Colonies/Cc.			
	1 Wk.	2 Wks.	3 Wks.	4 Wks.	10 Wks.		1 Wk.	2 Wks.	1 Wk.	2 Wks.	3 Wks.	1 Wk.	2 Wks.	3 Wks.	9 Wks.
Sulfanilamide 10	..	Inn.*	..	..	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0
20	0	0	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	240	0
30	Inn.	0	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	110	0
60	0	0	10	10	0	0	0	0	..	0	0	Inn.	Inn.	40	0
100	0	0	20	0	0	0	0	0	..	0	0	Inn.	Inn.	500	0
200	..	..	0	50	0	..	..	..	..	0	0	300	0	10	0
Sulfapyridine 10	Inn.	Inn.	Inn.	Inn.	0	0	0	20	..	0	0	Inn.	Inn.	Inn.	0
20	110	Inn.	Inn.	Inn.	0	0	0	0	..	0	0	0	0	60	0
30	Inn.	Inn.	Inn.	Inn.	0	0	0	0	..	0	0	30	0	70	0
60	0	0	0	0	0	0	0	0	..	0	0	0	0	80	0
100	0	20	0	0	0	0	0	0	..	0	0	10	0	20	0
200	..	0	0	20	0	..	..	..	..	0	0	0	60	40	0
Sulfathiazole 10	Inn.	10	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0
20	0	Inn.	10	0	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0
30	0	Inn.	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0
60	0	10	0	0	0	0	0	0	..	0	0	110	0	200	0
100	0	0	0	10	0	0	0	0	..	0	0	100	0	40	0
200	..	20	20	0	0	..	..	..	..	0	0	0	0	0	0
Control.....	Inn.	Inn.	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0
	Inn.	Inn.	Inn.	Inn.	0	0	0	0	..	0	0	Inn.	Inn.	Inn.	0

* In this and the following tables Inn. signifies innumerable.

TABLE 2.—Tubes Stored at 5 C. (First Series of Experiments)

Drug Concentration, Mg./100 Cc.	Organism: Staphylococcus Aureus 12 Colonies/Cc.						Hemolytic Streptococcus 8 Colonies/Cc.						Bacillus Lactis Aerogenes 16 Colonies/Cc.			
	1 Wk.	2 Wks.	3 Wks.	4 Wks.	10 Wks.		1 Wk.	2 Wks.	3 Wks.	4 Wks.	5 Wks.	11 Wks.	1 Wk.	2 Wks.	3 Wks.	9 Wks.
Sulfanilamide 10	60	10	20	30	..	16	36	10	..	10	0	20	0	0	0	0
20	10	0	30	6	..	29	4	10	..	40	0	10	0	0	0	0
30	0	10	0	80	..	14	58	0	..	30	0	0	0	0	0	0
60	0	60	0	80	..	11	8	..	..	20	0	0	0	0	0	0
100	0	30	20	0	..	5	18	3	..	0	0	0	0	0	0	0
200	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sulfapyridine 10	0	10	10	30	..	15	6	0	..	50	0	0	0	0	0	0
20	0	20	10	0	..	15	0	10	..	20	0	50	0	0	0	0
30	0	10	40	20	..	10	6	10	..	10	0	40	0	0	0	0
60	0	10	0	0	..	2	16	0	..	50	0	10	0	0	0	0
100	0	0	10	30	..	0	38	30	..	20	0	0	0	0	0	0
200	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sulfathiazole 10	30	10	10	20	..	3	22	30	..	50	0	10	0	0	0	0
20	10	50	50	0	..	2	26	10	..	0	0	0	0	0	0	0
30	0	10	20	50	..	4	0	50	..	20	0	30	0	0	0	0
60	0	30	0	50	..	0	2	10	..	10	0	0	0	0	0	0
100	0	40	0	50	..	0	30	50	..	10	0	40	0	0	0	0
200	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Control.....	Inn.	20	0	210	..	Inn.	38	100	..	30	0	30	0	10	10	0
	Inn.	..	20	30	..	Inn.	58	30	..	20	0	0	10	10	0	0

of the sulfonamide concentration in random plasma tubes were made after three months, and it was found that the drugs were present in the original concentration.

To these tubes, then, and one or more controls for each variety of bacteria used, was added a known number of organisms as determined by the dilution-plating technic. The organisms used⁴ were hemolytic streptococcus strain cv203 and strains of Bacillus lactis aerogenes and hemolytic Staphylococcus aureus isolated from patients in the Presbyterian Hospital shortly before these experiments were undertaken. One set of such tubes and controls, securely stoppered against evapora-

results are recorded as the number of colonies per cubic centimeter of plasma-drug solution.

Our second group of experiments was essentially similar to the first. The drugs used were sulfanilamide, sulfapyridine, sulfathiazole and sodium sulfadiazine in concentrations of 10, 50, 100 and 200 mg. per hundred cubic centimeters. With the exception of sodium sulfadiazine,⁵ which was prepared by passing through a Seitz filter, the drugs were taken from stock, carefully weighed out and the necessary amounts added to 10 cc. tubes of plasma. Whereas at the higher concentrations of 100 and 200 mg. per hundred cubic centimeters the drugs at first remained undissolved, as evidenced by

4. Cultures were obtained through Misses Gladys Hobby, Barbara Mulliken and Margaret Sheridan.

5. Dr. David Bryce of the Lederle Laboratories, Pearl River, N. Y., supplied the sodium sulfadiazine.

a white precipitate at the bottoms of the tubes, they all went into solution during the first week. Determinations of the drug concentration in tubes chosen at random supported this conclusion. The organisms used were a strain of *Streptococcus viridans* isolated from a patient with subacute bacterial endocarditis who had received no chemotherapy, pneumococcus type I recently passed through mice and the same strains of *Staphylococcus aureus* and *Bacillus lactis aerogenes* as used previously. One cc. samples were taken weekly and added to 10 cc. pour plates of agar or 10 per cent rabbit

RESULTS

The first series of experiments are reported in tables 1 and 2. In the tubes stored at 37 C. (table 1) it will be seen that the hemolytic streptococcus failed to grow, even in the controls, despite two inoculums. This observation had been previously reported by Tillett.⁶ *Staphylococcus aureus* grew well for four weeks at concentrations of all drugs of 30 mg. or less per hundred cubic centimeters. With higher concentrations of the sulfonamides definite inhibition of growth was noted, but no consistently negative tubes were obtained.

TABLE 3.—Tubes Stored at 37 C. (Second Series of Experiments)

Drug Concentration, Mg./100 Cc.	Organism: Inoculum:	Staphylococcus Aureus 40 Colonies/Cc.						Streptococcus Viridans 30 Colonies/Cc.			Bacillus Lactis Aerogenes 50 Colonies/Cc.				Pneumococcus 30 Colonies/Cc.		
		1 Wk.	2 Wks.	3 Wks.	4 Wks.	5 Wks.	6 Wks.	1 Wk.	3 Wks.	6 Wks.	1 Wk.	2 Wks.	4 Wks.	8 Wks.	1 Wk.	2 Wks.	3 Wks.
Sulfanilamide 10	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	Inn.	0	Inn.	Inn.	11	0	0
50	30	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	Inn.	0	Inn.	Inn.	0	0	0
100	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	5	0	0	0	1	0	0
200	Inn.	400	200	Inn.	Inn.	Inn.	Inn.	0	0	0	5	0	0	0	3	0	0
Sulfapyridine 10	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	0	0	0	0	0	0	0
50	Inn.	Inn.	50	Inn.	Inn.	200	Inn.	0	0	0	3	0	0	0	0	0	0
100	260	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	14	0	0	0	0	0	0
200	Inn.	200	200	Inn.	Inn.	..	0	0	0	0	0	0	0	0	0	0	0
Sulfathiazole 10	Inn.	Inn.	400	Inn.	Inn.	Inn.	Inn.	0	0	0	1	0	0	0	0	0	0
50	50	Inn.	Inn.	4	Inn.	Inn.	Inn.	0	0	0	0	0	0	0	0	0	0
100	Inn.	150	1	0	Inn.	10	0	0	0	0	1	0	0	0	0	0	0
200	10	Inn.	Inn.	0	0	2	0	0	0	0	8	0	0	0	0	0	0
Sulfadiazine 10	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	..	..	..	..	0	0	0	..	..	0	0
50	0	0	0	17	5	..	0	0	0	0	0	0	0	..	0	0	0
100	..	..	..	..	..	..	0	0	0	0	..	..	..	..	..	0	0
200	0	0	0	2	13	..	..	..	..	..	..	..	0	..	0	0	0
Control.....	Inn.	Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	0	Inn.	Inn.	Inn.	Inn.	4	13	0
		Inn.	Inn.	Inn.	Inn.	Inn.	0	0	0	0	Inn.	Inn.	Inn.	..	..	..	0

TABLE 4.—Tubes Stored at 5 C. (Second Series of Experiments)

Drug Concentration, Mg./100 Cc.	Organism: Inoculum:	Staphylococcus Aureus 40 Colonies/Cc.						Streptococcus Viridans 30 Colonies/Cc.			Bacillus Lactis Aerogenes 50 Colonies/Cc.				Pneumococcus 30 Colonies/Cc.		
		1 Wk.	2 Wks.	3 Wks.	4 Wks.	5 Wks.	6 Wks.	1 Wk.	3 Wks.	6 Wks.	1 Wk.	2 Wks.	4 Wks.	8 Wks.	1 Wk.	2 Wks.	3 Wks.
Sulfanilamide 10	50	22	0	4	2	5	5	10	4	0	10	0	0	0	30	2	0
50	10	4	0	3	2	4	4	1	0	0	..	0	0	0	0	2	0
100	90	15	2	6	3	6	6	0	1	0	230	0	0	0	0	2	0
200	60	0	0	2	0	17	17	0	0	0	10	0	0	0	0	1	0
Sulfapyridine 10	70	18	2	5	7	3	3	0	4	0	30	1	0	0	0	2	0
50	10	29	0	5	17	11	11	0	0	0	20	0	0	0	0	3	0
100	..	9	1	2	14	18	18	0	0	0	0	0	0	0	0	0	1
200	70	4	0	4	0	1	1	0	0	0	50	0	0	0	0	0	0
Sulfathiazole 10	80	13	0	3	5	12	12	0	3	0	0	0	0	0	1	1	0
50	30	11	0	2	2	19	19	0	0	0	5	0	0	0	0	0	0
100	30	17	7	3	2	11	11	0	0	0	0	0	0	0	0	0	0
200	20	27	0	0	5	5	5	9	0	0	0	0	0	0	0	0	0
Sulfadiazine 10	..	13	4	4	10	31	31	0	..	..	..	0	0	0	..	3	0
50	..	12	0	12	13	0	0	0	..	..	..	0	0	0	..	2	0
100	..	18	..	..	..	..	..	..	..	..	..	0	0	0	..	0	0
200	..	34	0	2	2	3	3	0	..	..	..	0	0	0	..	0	0
Control....	8	32	0	8	3	14	14	0	..	..	10	0	0	0	0	4	0
	..	18	2	7	5	30	30	11	4	0	10	0	0	0	..	3	0

blood agar. These were incubated for at least forty-eight hours.

The third group of experiments was done with 10 cc. samples of plasma containing sodium sulfathiazole in a concentration of 200 mg. per hundred cubic centimeters. In one experiment such samples were placed in uncovered Petri plates and exposed to air for periods ranging from five to one hundred and twenty minutes. Control agar and 10 per cent rabbit blood agar plates were exposed at the same time for thirty minutes. After exposure the plasma-drug solutions were placed in sterile tubes and kept at room, incubator or refrigerator temperature for a period of one week, during which time 1 cc. samples were incubated with 10 cc. of agar in pour plates for at least forty-eight hours.

Sampling at the end of ten weeks revealed that the organisms had died out in all tubes, including controls. The results with *Bacillus lactis aerogenes* were similar.

Table 2, showing the results in tubes stored at 5 C., indicates that no significant effect was obtained against either the staphylococcus, streptococcus or *Bacillus lactis aerogenes*. In this experiment the control tubes paralleled the test tubes except for the first week, at which time bacteriostasis was apparent.

Experiments of the second group are reported in tables 3 and 4. Here again at 37 C. (table 3) it will

6 Tillett, W. S., and Abernethy, T. J. Serological Reactions with Hemolytic Streptococci in Acute Bacterial Infections, *Bull. Johns Hopkins Hosp.* 50:270 (April) 1932. Tillett, W. S.: The Bactericidal Action of Human Serum on Hemolytic Streptococci, *J. Exper. Med.* 65:147 (Jan) 1937.

be seen that growth of *Staphylococcus aureus*, while somewhat inhibited at the higher concentrations, was still present in most tubes after eight weeks, appearing in the sulfadiazine tubes, up to then apparently negative, after four weeks. This fact, plus the long period required for growth to appear in our pour plates in all these experiments, confirms the well recognized

TABLE 5.—*Plasma Containing Sodium Sulfathiazole at Concentrations of 200 Mg./100 Cc. Exposed to Room Air in Petri Dishes at Varying Periods of Time*

Time in Minutes	Day of Sampling						Temperature of Storage
	1	2	4	5	7	22	
120	0	0	41	..	..	..	Room temperature approximately 20 C.
60	0	..	..	0	..	..	Room temperature approximately 20 C.
30	0	0	..	..	0	..	Room temperature approximately 20 C.
30	0	..	..	..	0	..	Room temperature approximately 20 C.
25	0	0	..	..	0	..	Room temperature approximately 20 C.
20	0	0	..	..	0	..	Room temperature approximately 20 C.
15	0	0	..	..	0	..	Room temperature approximately 20 C.
10	0	0	..	..	0	..	Room temperature approximately 20 C.
5	0	0	..	..	0	..	Room temperature approximately 20 C.
30	..	..	..	..	0	..	5 C.
30	0	..	..	..	0	..	37 C.
30 Control Inn.	..	..	..	..	..	..	Room temperature approximately 20 C.
30 Control Inn.	..	..	..	..	..	..	Room temperature approximately 20 C.

inhibitory effect of the sulfonamides on bacterial growth and demonstrates the practical impossibility of one being certain of a bactericidal action. Thus, had the sulfadiazine tubes been discarded at the end of three weeks or had our pour plates been discarded after forty-eight hours, many more negative tubes would have been reported. Little growth was obtained with *Streptococcus viridans* and the pneumococcus in either the control or the treated tubes. With *Bacillus lactis aerogenes* some bacteriostatic effect was obtained in the treated tubes.

At 5 C. growth of *Staphylococcus aureus* was poor but persistent, despite the drugs. The other organisms failed to multiply in test or control tubes.

The last set of experiments (tables 5 and 6) indicates that the plasma exposed to air in the presence of a concentration of sodium sulfathiazole of 200 mg. per hundred cubic centimeters supported but little growth when the length of exposure was sixty minutes or less (table 5). However, as shown in table 6, the three drugs at concentrations of from 10 to 100 mg. per hundred cubic centimeters exposed to air for thirty minutes showed growth on the pour plates at all concentrations to the same extent as in control plates without a drug.

COMMENT

In 1939 Milan Novak⁷ in this country and Harington and Miles⁸ in England suggested that the sulfonamide compounds might be useful in the preservation of stored blood. Novak's first communication was followed by a second paper⁹ in which he definitely recommended the use of sulfanilamide in a concentration of 20 mg. per hundred cubic centimeters as a satisfactory preservative agent for whole blood over a period of ten days. However, although his tables show a bacteriostatic effect in many tubes, growth was present. The ability of the organisms to grow after a period of days remained. Thus, in the case of *Pseudomonas aeruginosa*, he states that not even a concentration of 100 mg. per hundred cubic centimeters is sufficient to

inhibit this organism beyond a fifteen day period. Hunwicke¹⁰ was also able to demonstrate bacteriostasis but similarly noted small growth persisting over a period of a month or more. From these data it does not appear to us that such a procedure would be safe for general use. In 1940 Bécart and Philippe¹¹ suggested the use of sulfanilamide in the preservation of plasma, and Novak¹² has also extended this method to the preservation of stored plasma. Dr. Novak states: "In actual routine clinical usage over a two year period the method has been found to be completely satisfactory regardless of temperature (4 C. to 24 C.) or duration of storage." We question whether this proves the efficacy of the method, since the last 7,364 consecutive phlebotomies done by the American Red Cross at the Presbyterian Hospital Unit in New York City,¹³ using the closed system of collection with no preservative, have been done with only 1 instance of contamination. Here again we do not feel that the data presented support the conclusions drawn.

Our own experiments indicate that the sulfonamide compounds unquestionably exert a bacteriostatic effect on some organisms. This is best shown in the tubes exposed to contamination by air in which at a concentration of sodium sulfathiazole of 200 mg. per hundred cubic centimeters very little growth occurred. On the other hand, when similar tubes were specifically contaminated with known organisms, growth was persistent. Because of the latter observation and the impossibility of controlling either the type or the extent of contamination, we believe that these agents are not sufficiently inhibitory under all conditions to make them safe preservatives for stored plasma.

TABLE 6.—*Plasma Exposed to Air in Petri Dishes for Thirty Minutes (Two Sets of Experiments on Different Days, with Varying Concentrations of the Sulfonamide Compounds)*

	Drug Concentration, Mg./100 Cc.	Colonies/Cc.
Sulfanilamide.....	10	5 Inn.
	20	10 Inn.
	60	.. Inn.
	100	25 Inn.
Sulfapyridine.....	10	10 Inn.
	20	10 Inn.
	60	35 150
	100	5 Inn.
Sulfathiazole.....	10	35 100
	20	10 Inn.
	60	0 Inn.
	100	25 Inn.
Control agar plates.....		15 100
		7 115
Control blood plates.....		26 ..
		23 ..
Control plasma.....		.. Inn.
		.. Inn.

CONCLUSIONS

1. The sulfonamide compounds tested have been found to exert some bacteriostatic effect in stored plasma.

2. This effect has not been sufficiently significant or consistent at the concentrations tested to recommend the use of the sulfonamide derivatives alone in the preservation of stored liquid plasma.

620 West One Hundred and Sixty-Eighth Street.

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MEDICOLEGAL ASPECTS OF PHYSICAL MEDICINE

PREVENTION OF LEGAL CLAIMS AND HOW THE
PHYSICIAN SHOULD SAFEGUARD HIMSELF

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As long ago as 42 B. C., Publius Syrus said "Many receive advice; only the wise profit by it."

Every member of the regular medical profession, general practitioners as well as the members of every specialty, uses either directly or indirectly physical methods in treatment. When he prescribes these methods, he assumes at once a medicolegal responsibility, just as he does in prescribing any other form of treatment.

Physical therapy, according to the Council on Physical Therapy of the American Medical Association, is a term employed to define the treatment of disease by various nonmedical and nonsurgical means. It comprises the use of heat, light, water, electricity, massage, exercise and climate.

There are certain definite indications for the use of one or a combination of several of these physical agents in the treatment of disease. However, to depend solely on these agencies, to use them in lieu of better proved methods or to employ them without first having thoroughly studied the patient from the standpoint of diagnosis is harmful practice.

By law a physician is bound to bestow such reasonable ordinary care, skill and diligence as physicians and surgeons in the same neighborhood in the same general line of practice ordinarily exercise in like cases. A physician, therefore, must follow established methods of practice, and should he depart from recognized remedies or methods of treatment or diagnosis he does so at his own peril and risk. Should such departure result in injury to the person so treated, the physician will be liable for damages, however good his intentions may have been—but this must be proved. The law does not exist which expects physicians to be infallible—allowance is made for the possibility of human beings to err.

A physician prescribing physical therapy may decline or refuse outright to render services if for any reason he should prefer not to do so. However, if he has agreed to do so he has assumed a contract and is liable for any damages which may result from failure to fulfill or complete his contract. On assuming or undertaking to diagnose and treat a condition, one contracts and agrees that he possesses a reasonable amount of skill and knowledge and that he will apply that skill with ordinary care and diligence.

What are the medicolegal aspects to be considered when the physician delegates some member of a family, a practical, undergraduate or graduate nurse or office attendant or physical therapy technician (registered or unregistered) to carry out his orders, whether verbal or written? Just as with the surgeon, the physician is responsible for any negligence on the part of the person to whom he has assigned a duty, even though she is employed and paid by the patient. It behooves him, therefore, to see that his instructions are fully understood and that they will be carefully carried out. If the work of the nurse is a part of the service rendered by the physician and this service is rendered in the absence of direction by him, he is liable. In a hospital, the physician must give specific, preferably written, instruction

to the nurse or technician, and a failure to do so might well give cause for action against him. He may order the application of a hot water bottle; if it is a class A hospital, he assumes that the proper heat has been used (120 to 125 F. as the temperature of the water put into the bottle). Though this is assumed to be familiar knowledge among nurses, the proper and safe way would be for the physician to write a definite order stating:

1. The part of the body to which the hot water bottle is to be applied.
2. Whether the hot water bottle is to be in direct contact with the skin or whether there should be intervening material.
3. A word of caution if the weight of some part of the body is to be resting on the bottle (undue pressure might cause a circulatory ischemia resulting in a burn or destruction of the tissue).
4. Length of application and temperature of the water put in the bottle, with respect at all times for the will of the patient. If he or she says the bottle is too hot—remove it.
5. The bottle should not be applied if the patient is unconscious or asleep unless there is adequate supervision.

The same principles apply in substance to the use of other physical therapeutic energies: hot or cold applications of water, infra-red lamps, bakers, electric heating pads, ultraviolet radiation, short wave diathermy, paraffin baths and other mechanical agencies. Any physician who does not know the nature of and the therapeutic application of and indications for the energy he wishes to prescribe is not qualified and should not order it. When it is prescribed, there should be a written order for its use. Patients are often sent to the physical therapy department of a hospital, or to the offices of lay technicians, with no order other than that they are to have some physical therapy. Here again I will say that a physician in prescribing for the patient agrees that he possesses a reasonable amount of knowledge and will apply that knowledge with care. In prescribing physical therapy it is assumed that he knows what form should be applied, and he should write and sign an order for this remedy just as he would be expected to do when sending his patient to a drug store for medicines. When a technician is left to administer treatment to the patient in the absence of instruction, it cannot be expected that the proper results will be secured; too much is left to chance. The patient will most likely become discouraged, and it is not surprising that so many finally land in the offices of the irregulars. After a few months the physician who has meant well enough may find himself called into court to answer charges of neglect.

A physical therapy department, whether in the hospital or out, should be in charge of a physician trained in physical medicine, and this physician should be assisted by registered physical therapy technicians. This would decrease medicolegal liability some 90 per cent and at the same time secure confidence on the part of the patient and divert the patient from the offices of the irregulars. A department run on such a plan would not be subject to the prejudice that is felt by many of the regular profession toward the therapeutic possibilities of scientific physical medicine. It is their confidence that the specialty of physical medicine wants; the confidence of the patient will follow. Happily, departments supervised in this manner do exist throughout the country, but there is need of many more.

I believe that the majority of medicolegal cases involving physical medicine are brought against members of the regular profession who merely dabble in physical

therapy and are not so often brought against the physician who specializes in part or entirely in physical therapy. This belief is substantiated by data obtained from Dr. L. J. Regan, chairman of the Committee on Medical Defense of the Los Angeles County Medical Association, who says that during the past ten years only about 6 per cent of all claims in Los Angeles have been in the field of physical therapy; it is interesting to note that the specialist is not often charged with damage, as is the general practitioner.

The foregoing comments are applicable to our daily physical therapy practice. The physical therapist is vulnerable, and unless he is cognizant of these potential dangers he is liable to suit. The physician would do well to adopt an attitude of defense and consider every patient as a potential legal case. By this I do not mean to infer that he must be belligerent—he may be as gracious as the occasion demands but at the same time not forget to be cautious.

GENERAL PRECAUTIONARY MEASURES

The subject of legal safety may be considered from the point of view of both general and specific treatment. Of utmost importance is a complete history. A complete physical examination should be made and laboratory and roentgen examinations when indicated. Each treatment should be charted under the date administered, together with the kind and length of treatment, any changes that might have taken place in the condition of the part treated and any other significant data. The type of treatment, together with its limitations, possibilities and probabilities, should be fully explained to the patient at the beginning; hasty, unguarded statements regarding the prognosis should be avoided. A definite understanding as to the number of treatments required should be determined, together with the cost and convenience in payment of the obligation.

Patients should have privacy and should always be properly draped with clean linens. The physician should solicit and always accept the patient's statement as to comfort; he should emphasize in advance that if the treatment is uncomfortable, even to the slightest degree, the patient is so to notify the operator.

It is wise, unless especially qualified, not to use equipment unless it bears the stamp of approval of the Council on Physical Therapy of the American Medical Association. Particularly is this true in regard to photochemical and thermoelectrical equipment. Equipment should be inspected regularly every six months or preferably oftener by a capable supervisor. A signed certificate by the person making the inspection, including the serial number of the apparatus together with the date of inspection, is of value. Should any court action arise, this certificate will serve as evidence that the equipment was in proper condition. Automatic timing devices serve as additional safeguards.

Before the patient leaves the table the area treated should be inspected and any irregularities noted. Also patients should be instructed to call the physician if anything of an unusual nature develops before the next scheduled visit. This last precaution may be taken in the presence of a technician.

PRECAUTIONS TO BE OBSERVED IN THE USE OF SPECIFIC ENERGIES

Thermal radiation is used when superficial local heating is desired for penetrating effects of approximately 3 mm. in the region of the far infra-red, as produced by heated objects: bricks, hot water bottles, electric

pads, hot water or paraffin baths, electric heater or carborundum filaments in a suitable reflector.

The average cutaneous temperature is about 89.6 F., and an increase of about 18 F. is about the limit to which the temperature of the skin can be raised without the formation of a bleb or blister. It must be remembered, however, that some parts of the body surface are much cooler, in which case there is more latitude. To avoid injury to tissues one should keep in mind the temperature at which the various thermal modalities may be used. Burns will occur if there is an excessive absorption of thermal energy, and the final criterion is the patient's comfortable sensation to heat. With regard to thermal treatment one should express oneself in terms of degrees of heat; with the patient the word burn should never be used, nor should it be used in court—a better term would be counterirritation. Before treatment is begun, one would do well to inquire as to previous treatments—roentgen rays, various chemical substances or drugs taken internally—because of possible narcotic effects or because of a possible idiosyncrasy or allergy.

The Elliott machine, which circulates hot water through rubber applicators, used principally in body cavities, requires special training and experience for its safe use.

A hot air apparatus, Council accepted, has a rubber bag through which hot air circulates and is used in heating body cavities; there is a temperature range of about 130 degrees F.

With hot air blowers the air is circulated through a bag at a temperature not to exceed 130 F. When these blowers have been directed against the bare skin, burns have occurred.

A new device for a hot water bottle consists of an electrical metal heater which protrudes down into the water, so controlled that the water is kept at a constant temperature. In order to avoid burns, this should not be set for more than 125 F.

The automatic electric blanket is a blanket thermostatically controlled wherein the temperature is maintained at a constant level despite environmental changes.

Cooley compresses, Council accepted, keep a constant warmth in wet dressings by means of a waterproof electric pad.

Brown and Allen have described electrical cuffs and sleeves, controlled by accurate thermal regulating mechanisms; but this apparatus is still in an experimental stage of development.

Chemical heat is to be had in the form of eye pads and sinus pads. A uniform heat of about 108 F. to 114 F. is maintained for about an hour. Chemical crystals within these pads, when moist, give off heat as the result of chemical reaction.

These Council accepted devices, when in good working order, are safe and convenient means by which dry or moist heat may be applied; if they were used more frequently by physicians and hospitals better clinical results would be obtained without the hazard of burns. Burns may vary from a devitalization to complete destruction of the tissues involved. They may occur immediately or take place in several minutes, hours or even days after the original exposure. The degree of tissue destruction may vary from an erythema of first degree with blistering of the superficial layers of skin to coagulation and destruction of the deeper structures. These wounds become easily infected. They are indolent

in healing and often result in unsightly scars. Following infra-red exposure, a mottling of dark red spots over the area treated means that there has been too much absorption of heat, and it will be followed by edema of the tissue and finally by blistering. When any such accident as this occurs, legal advice should be sought immediately.

To date there is no better means of estimating the amount of heat to be given by means of short wave diathermy than the sensation of the patient; therefore, the degree of heat must be limited to that which produces no unpleasant sensation or pain. As symptoms of overheating there are pain, aching, soreness, weakness, edema and effusion. The limit of tolerance in inflammatory tissue is always lower than that of normal tissue. Here, again, it will be well to stress the need of knowing that the nervous and circulatory systems are intact. In treatments about the head, dizziness or giddiness is an indication for discontinuing the treatment. In heart disease, the occurrence of tachycardia would mean that treatment should be stopped. Contraindications must be carefully studied and heeded; after treatment has been instituted any untoward signs must be noted. To keep out of trouble, such danger warnings must not be ignored.

Knives, keys, money, watches and other metallic substances should be kept out of the field of operation. Tables and chairs should have no metal parts. Beds equipped with wire or innerspring mattresses are a fire hazard.

When diathermy is prescribed for use in the home, the physician must remember that he is liable for accidents or bad results attendant on its use. To protect himself, therefore, he should see to it that the apparatus secured for such treatment is Council approved, that it is in good working order and that its operation is understood by the person who is to administer the treatment. In order more thoroughly to protect himself, he should have a trained technician go to the house to administer the treatment prescribed and to watch over the patient during the course of the treatment.

Fever therapy requires specialists in that field for its administration. Its value is well known, and soon it will become important from a medicolegal standpoint.

Ultraviolet therapy ranks near the top of the list as one of the causes for medicolegal action. It should, as a matter of fact, be one of the safest of energies. When burns have occurred it has been found that there is far less permanent tissue destruction than results from the use of other energies. In order to safeguard oneself when using ultraviolet therapy, individual lamps should be standardized, since they vary in erythema potency. Rooms in which treatments are given should have adequate ventilation. Goggles or a shield should be used over the eyes of the patient. The genitalia should be covered; the breasts of women also should be protected. Hypersensitivity and the patient's individual reaction to ultraviolet therapy must be studied; as an example, senile and keratotic skins may predispose to the development of cancer. Minute attention must be paid to the dose that the patient can take safely. This individual limit of safety must be determined before the patient is subjected to treatment, and subsequent treatments must be governed according to the observations made. Diabetic patients often react unfavorably to irradiation, with resulting local and general petechial hemorrhages, but it is also a form of treatment which has been shown

to be of real value in reducing blood sugar levels. One of the really important considerations is provision for the sounding of a time clock to measure the length of exposure.

From a medicolegal standpoint, if an energy is to be used the physician should know that it has been used and been proved an advantage by other authorities. Some of the absolute and proved indications listed by the Council on Physical Therapy of the American Medical Association for the use of ultraviolet radiation are for prophylactic and curative effects in rickets, infantile tetany, spasmophilia and osteomalacia. Other relative indications may be found in anemia, hemophilia, chlorosis, tuberculosis and arthritis. The user of these energies will do well to prescribe them when indicated, but I should like to repeat that he must have full knowledge of the various forms and technics of application, must be well aware of the hazards involved and must be wary with regard to experimentation; otherwise he may find himself with legal problems to settle.

MANIPULATION OF DEFORMED JOINTS

Manipulation of deformed joints is a form of physical therapy which is often followed by legal action. A mechanical apparatus for manipulative procedures on arthritic or deformed joints is packed full of dynamite. More than ordinary care should be practiced. The danger of producing fractures of atrophied bones is ever present, and permanent ankylosis sometimes results. Before operations of this nature are undertaken it would be wise for the physician to secure data which might seem entirely too detailed—measurements alone are not sufficient—actual photographs should be taken to substantiate the measurements, and any significant observations recorded. A defendant coming before a court, council and jury who has not a complete record of the conditions when he started treatment has little argument to offer in his own defense and has as good as lost the case before entering court.

One might think that there is little trouble to result from treatment by massage. Even in this there are certain precautions to be observed. One must not allow the patient to be exposed to a chill when heat has been applied. When the area to be massaged is covered with hair the part should be shaved, or particular care should be used to avoid irritation which might result in a folliculitis or pustular infection, with indolent response to treatment. Massage varies enough in type so that here again a definite prescription should be written, calling for a stroking, kneading, percussion or vibratory method. Massage, too, has its contraindications. These are found in tumefactions in which there may be a malignant condition, in dermatoses, in inflammatory conditions such as swollen and painful joints and in cases of systemic disease with fever. There are many contraindications which, if not heeded, could easily lay grounds for legal action.

HYDROTHERAPY

Hydrotherapy is another form of physical therapy which may be so simple as to call only for early morning hikes barefooted through dew-covered grasses and on the return from such a jaunt drinking as much water as one can hold. Baruch described hydrotherapy as the application of water in any form, from solid and fluid to vapor, from ice to steam, internally and externally. In its place, one may expect good results.

from treatment of this kind; but one must not be so optimistic as to disregard dangers which may be encountered.

PARAFFIN BATH

The paraffin bath is designed to facilitate and simplify the application of heat over the joints and other affected parts of the extremities. The temperature of the melted paraffin should range from 120 to 130 F., and 20 per cent should be liquid petrolatum, that is, 4 parts paraffin and 1 part liquid petrolatum. Implicit instructions should be given patients with regard to preparing this in the home to use a double boiler when melting the paraffin and to turn out the fire under the container before the mixture is applied. The patient who does not foresee the possibility of burns must be forewarned. A bath thermometer may be used to determine the temperature. For those who have no thermometer it is safe to use the mixture after it has cooled to a point at which a slight scum forms over the surface. The fingers should be held apart when the hand is immersed; after the paraffin has started to set, the part dipped should be held quiet to avoid cracking of the paraffin, for when this happens subsequent immersion may cause burns. It is important to time these treatments. They are to last, as a rule, from fifteen to forty-five minutes. Mixtures of paraffin and oil may be used repeatedly without changing, since the material sterilizes itself. Hair over any of the parts treated should be shaved.

There are special apparatuses¹ on the market for the paraffin bath, constructed with special heating elements, and with positively regulated controls for temperature and time limit.

GALVANIC CURRENT

Galvanic current of but a few milliamperes may cause tissue destruction if concentrated on a small area. Galvanic current is used to drive certain metals or drugs into the tissues for their superficial penetration and later absorption by the blood stream. While the penetration of these ions is slight, there is danger of producing a tattoo if the current is introduced from the positive pole through a steel needle. The physician who attempts epilation is laying himself open for possible court action.

COLONIC THERAPY

Much may be said of the dangers which may arise from the use of colonic therapy. The uses and abuses of this form of treatment are many; yet in trained hands and with the proper technic it is a valuable adjunct to the treatment of some diseases. All that is required by way of pressure is $\frac{1}{2}$ pound, which is the equivalent of 1 pound of water held 13 $\frac{1}{2}$ inches high. A douche held 4 $\frac{1}{2}$ feet high will give a pressure four times greater than is needed, and the pressure is increased 1 pound for every 27 inches that the container is raised. Because of the likelihood of rupture of diverticula, one can readily understand the importance of having a given elevation and a controlled pressure.

Stiff colon tubes have been known to rupture thin-walled diverticula. The so-called high enema has been a great talking point with irregulars and with some of the regular profession. It has been found that the tube seldom reaches farther than the splenic flexure, and most often it curls up before reaching that point. It so happens that the normal gradient for fluids is from the rectum to the cecum; therefore, nothing is to be gained by trying to insert a tube any depth beyond the rectum.

1. These may be obtained from the Thermo-Electric Company, 717 Frankfort Avenue, Cleveland.

The major contraindications in colonic therapy are severe cardiac disease, aneurysm, advanced arteriosclerosis, severe anemia, high fevers, exophthalmic goiter, gastrointestinal ulcer (hemorrhage or perforation), great debility from any cause, and anal disease (such as severe hemorrhoids, pruritus, eczema or stricture).

CONSULTATION

It is a wise man who will call for consultation when a course of treatment is not clear. It is well to invite other opinion as a check on one's own judgment. As said before, the law requires that a physician bestow such reasonable ordinary care, skill and diligence as is prevalent among physicians and surgeons in the same general line of practice. To seek consultation is to use reasonable and ordinary care and may be considered a precautionary measure.

INSURANCE

Every physician using physical agents should be well covered with a standard policy in an A 1 company. He may seek the advice of his local county medical society as to which insurance carrier is the most reliable and offers the best coverage. Generally the premium varies according to the apparatus used. Many companies do not offer liability coverage for those using physical therapy equipment. It has been said that during the five year period that ended Dec. 31, 1940 there were approximately 1,214,200 claims filed by security workers of the Work Projects Administration and about 201,000 claims filed by civil employees of regular government establishments. Apart from roentgen and orthopedic practice, physical therapy stands at the head of the list for the number of damage suits, also for the number of judgments rendered the plaintiff. This report has not been reviewed by the U. S. Employees Compensation Commission, and any statement or expression of opinion contained herein is my own and does not necessarily reflect the point of view of the commission. These numbers do give some idea of the fact that people are what might be called claim minded and that it behooves the physician to be well protected.

BILLING THE PATIENT

In the face of unfavorable results which might lead to legal action careful judgment should be used with regard to the total charge. It may be wise not to bill immediately, it being remembered that time is often a great mental and physical healer; however, a bill should be sent. Only under special conditions should the physician fail to send his bill; but to cancel the bill entirely might easily be assumed as evidence of guilt or neglect on his part. One statement should be sent, the fact being noted on the ledger. The receipt of such a bill will arouse a response on the part of the patient, and the physician will then be in a position to judge the attitude of the patient. He may have occasion to consult his insurance carriers without delay.

CONCLUSIONS

When physical therapy apparatus is used it should be Council approved.

The physician's assistants should be well trained, registered technicians.

The physician assumes a medicolegal responsibility when he prescribes any form of physical therapy. His instructions should be explicit and preferably in writing.

Consultation is reassuring and is valuable as a safeguard.

Medicolegal entanglements would be reduced to a minimum if members of the profession would exercise every precaution and practice only the well established and safe methods.

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CYCLOPROPANE ANESTHESIA AT THE ROCHESTER GENERAL HOSPITAL

REVIEW OF 7,120 CASES

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It has now been twelve years since Lucas and Henderson¹ of Toronto introduced cyclopropane to the medical profession and seven years since the first clinical report by Stiles, Neff, Rovenstine and Waters.² In 1939 the Council on Pharmacy and Chemistry of the American Medical Association reviewed the work that had been done up to that time with cyclopropane in anesthesia and concluded that this agent was of value in the hands of competent anesthetists. The Council suggested, however, that more reports of anesthetics carried out with cyclopropane would be necessary before the proper place which cyclopropane might have in anesthesia could be accurately determined. Our purpose in this paper is to present a review of 7,120 cases in which cyclopropane has been used at the Rochester Hospital during the years 1935-1940 inclusive.

Table 1 shows the rate of increase in the use of cyclopropane at our hospital, by years. In the first year that we used this agent, 1935, the number of cases was 107; last year (1940) the number was 1,639. During the past two years cyclopropane has been used in nearly half of all our inhalation anesthesia, as may be seen in table 2. In 1939 42 per cent of all gas anesthesia was with cyclopropane, and in 1940 45.5 per cent of all inhalation anesthesia was done with this agent. This year the figure will probably be greater than 50 per cent. These figures compare nicely with Hathaway's³ statistics, from Waters' clinic, who stated that "slightly less than half of 4,668 anesthetic administrations at the Wisconsin General Hospital in 1938 were done with cyclopropane." Guedel⁴ has recently reported the results of more than 8,000 cases conducted by himself and by Treweek and McCuskey. These men believe that cyclopropane is as safe as any other anesthetic in the hands of trained men. Guedel emphasizes the fact that one must study cyclopropane anesthesia assiduously if one hopes to master the technique of administering it safely. Griffith⁵ of Montreal has just published his results in 5,000 cyclopropane anes-

thesias. He now uses this gas in more than 90 per cent of all inhalation anesthesia. Of his large series he felt that not more than three postoperative deaths could in any way be attributed to cyclopropane, and there were no immediate deaths. Like Guedel, he obtains full abdominal relaxation with cyclopropane alone, and he has used this gas in 586 upper abdominal cases alone without either or abdominal block.

Bogan⁶ in 1939 reviewed 1,000 consecutive anesthetics which he had conducted and found that he had used cyclopropane in 643 instances.

Before describing our own results with cyclopropane we will consider a few recent papers on various aspects of anesthesia conducted with this gas. Among the assets which may be attributed to cyclopropane are the following: 1. The induction period is comparatively fast and pleasant. 2. It may be given with a high concentration of oxygen. 3. The depth of respiratory excursion may be controlled, thus making the gas an ideal anesthetic for lung surgery. 4. Under full anesthesia there is quiet breathing and complete relaxation. As liabilities may be listed: 1. It is explosive in anesthetic concentration. 2. There is somewhat more bleeding under this anesthetic than under most others. 3. There is danger of respiratory paralysis when complete relaxation is obtained. 4. The patient passes from plane to plane of anesthesia faster than with almost any other agent.

Many hospitals throughout the country are not using cyclopropane because of its explosiveness. It is true, of course, that there have been several unfortunate instances in which this gas has exploded, and deaths have resulted. Horton⁷ of the Massachusetts Institute of Technology, who has been investigating this subject in great detail, says that statistics are inadequate to show whether any one gas used in anesthesia is more

TABLE 1—The Use of Cyclopropane at the Rochester General Hospital by Years

	Cases
1935	107
1936	825
1937	1,576
1938	1,509
1939	1,464
1940	1,639
Total	7,120

TABLE 2—Use of Cyclopropane as Compared with Other Inhalation Anesthesia During 1939 and 1940

	1939	1940
Total number of	4,221	4,699
Total number of	3,408	3,602
Total number of	1,464	1,639
Percentage of cyclopropane anesthetics of all inhalation anesthesia	42%	45.5%

explosive than the others. He points out the importance of flooring, shoes, wiring, electric switches, intercoupling, clothing, electrostatics, humidity, furniture, pads, pillows and the anesthesia machine itself in the cause and prevention of anesthetic explosions. On the other hand, as pointed out by Jones, Kennedy and Thomas,⁸ of the United States Bureau of Mines, the

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7. Horton, J. W. The Problem of Preventing Anesthetic Explosions. *Anesthesiology* 2: 121-137 (March) 1941.

8. Jones, G. W., and Thomas, G. J. The Prevention of Cyclopropane Oxygen Explosions by Dilution with Helium. *Anesthesiology* 2: 138-143 (March) 1941. Jones, Kennedy and Thomas.

explosibility of cyclopropane in anesthetic concentration may be considerably diminished by the addition to it of nitrous oxide, air, helium and carbon dioxide. Jones and Thomas⁹ now advocate the administration of a cyclopropane-helium-oxygen mixture in the ratio of 25-50-25 as being of definite value in preventing explosions. Greene,¹⁰ who recently reviewed 230 cases of anesthetic explosions for the American Society of

TABLE 3.—Type of Surgery in 3,103 Cases of Cyclopropane Anesthesia at the Rochester General Hospital During 1939-1940

Appendectomy	734
Gynecology	729
Orthopedic surgery	418
General surgery	409
Upper abdominal surgery	309
Proctology	180
Thyroid surgery	137
Genitourinary	61
Cesarean section	44
Neurosurgery	30
Otolaryngology	30
Surgery of the lung	16
Ophthalmology	6
Total	3,103

Avertin with amylene hydrate was used as a basal anesthetic in 111 cases, of which 92 were toxic thyroid cases. Endotracheal intubation was performed in 71 instances. In addition to the 734 appendectomies there were 141 appendices removed incidental to cholecystectomy, oophorectomy, hysterectomy and other operations.

Anesthetists, finds that 40 per cent of these accidents occurred in the presence of electrical machines such as diathermy apparatus and endoscopic, x-ray or cautery instruments. Another 59 cases (25.6 per cent), he says, could be attributed to suction apparatus. This means then that 65 per cent of all these explosions might have been prevented, and it must be remembered that the explosions just referred to involved all types of gas anesthesia, not just cyclopropane alone. Greene was able to find no case in which cyclopropane-air exploded, a fact which may have some significance. We in Rochester feel fortunate with regard to our relative humidity, as our position on Lake Ontario gives us a relatively high humidity, a fact which tends to prevent static electricity explosions. It is interesting to know that there has never been a static explosion in Australia and only one in England, facts which speak for themselves. Greene states that in the series which he studied the relative humidity in sixty-three static explosions was lower than 50 per cent in 32 cases. His conclusions are that there is no single effective way in which to prevent explosions but that a combination of factors must be considered, beginning first with the intelligence of the person administering the gas. Explosions have occurred under every known method of protection but frequently in the presence of apparatus which should have been excluded from the operating room or owing to faulty technic in administering the gas.

The question of excessive bleeding in the surgical field has been the subject of investigation. Some surgeons seem to be definitely against the use of cyclopropane on this account; others pay little or no attention to it. Waters¹¹ has shown that cyclopropane does cause oxygen saturation of the venous blood which will equal arterial blood. Associated with this there is an

increase in capillary bleedings which is believed to be due to compensatory sympathicotonia and hyperadrenia. Abramson, Grollman and Schwartz,¹² using the plethysmographic method, have found that there is an increase in blood flow through the hand and forearm during cyclopropane anesthesia. This work confirms the known observation that cyclopropane does diminish vasomotor tone. Whether or not this decrease in arteriolar tone is sufficient to interfere with surgery is a matter for the individual surgeon to decide. Our own surgeons feel that the advantages in using cyclopropane greatly outweigh the slight to moderate excess oozing which frequently does occur. We must remind ourselves of the work of Mann,¹³ however, who has shown that even with ether there is an increase in the blood flow of 64 per cent in the peripheral arteries, under light anesthesia. Guedel⁴ speaks of the "arteriolar-capillary-refill time" or the "A-C-R" sign, which he believes is of special value in determining circulatory efficiency under cyclopropane anesthesia. The A-C-R refers to the refilling of the capillary bed when pressure is exerted on the skin of the forehead, and it remains the same regardless of the depth of the anesthesia. It slows perceptibly, however, in the presence of shock or loss of blood. Guedel states that, if the A-C-R is satisfactory even in the presence of an arrhythmia, poor pulse or apnea, the patient is not in immediate danger.

We have used cyclopropane in almost every type of surgery, as may be seen by referring to table 3. Of the 3,103 cyclopropane cases during 1939-1940 abdominal surgery was done in just exactly 50 per cent. It has been necessary to supplement cyclopropane with ether in 6 per cent of the cases of abdominal surgery, although frequently but small amounts of ether were used. We have found that, in the great majority of cases in which we have used cyclopropane in abdominal surgery, relaxation can be obtained and maintained with cyclopropane alone. We agree with Guedel⁴ that it is possible to obtain relaxation with cyclopropane comparable to that obtained with spinal anesthesia. This almost always means, however, that apnea will supervene and that for at least part of the anesthesia it will be necessary for the anesthetist to control the patient's respirations passively. As is well known, apnea may occur at any time during cyclopropane anesthesia, during induction or at any later phase. Passive respiration can be kept up by the anesthetist for some considerable time when necessary, even for three quarters of an hour or longer. When active respiration reappears it must be amplified in most cases, as pointed out by Greeley,¹⁴ by passive respiration in order to insure adequate pulmonary ventilation. Inadequate active ventilation and respiration is much more dangerous than passive respiration with its hyperventilation. One must pay special attention to the excretion of cyclopropane. The high oil-water solubility ratio permits the cyclopropane to be absorbed by the body fats readily, and, since the gas must first pass through the blood plasma in reaching the fats and then back through the plasma in being excreted, it follows that there is built up in the fats a high proportion of cyclopropane which must

9. Jones, G. W.; Kennedy, R. E., and Thomas, G. J. Explosive Properties of Cyclopropane. The Prevention of Explosions by Dilution with Inert Gases. Report of Investigations, R. I. 3511, United States Department of the Interior, Bureau of Mines, 1940.

10. Greene, B. A.: The Hazard of Fire and Explosions in Anesthesia, *Anesthesiology* 2: 144-160 (March) 1941.

11. Waters, R. M.: Present Status of Cyclopropane, *Brit. M. J.* 2: 1013-1017 (Nov. 21) 1936.

12. Abramson, D. I.; Grollman, A. I., and Schwartz, A. L. The Influence of Cyclopropane upon the Peripheral Blood Flow in Man, *Anesthesiology* 2: 186-190 (March) 1941.

13. Mann, F. C., Essex, H. E., Herrick, J. F., and Baldes, E. J. The Flow of Blood in Relation to Anesthesia and to Operations, *Western J. Surg.* 43: 177-184 (April) 1935.

14. Greeley, Paul, cited by Guedel⁴.

not be overlooked. In the latter part of anesthesia this factor is not so important, as a leveling off process takes place following the decreased amounts of cyclopropane given after full anesthesia has taken place. When active respiration returns, one may even assist it by adding small amounts of carbon dioxide to the already diluted gas. Some anesthetists recommend the use of carbon dioxide routinely after operation, but we do not use it unless we feel that there is some special indication for it.

One of us¹⁵ has recently reported from this hospital the administration of cyclopropane in 94 cesarean sections. To these 94 cases we now add 44 done under cyclopropane during 1939 and 1940, making a total of 138. We have found that cyclopropane is of special merit in cesarean section. The patients do not perspire as they used to, the babies seldom have to be resuscitated, and it is possible to flush oxygen through the mother's blood and into the baby just before the cord is cut. We have had only 4 deaths in 423 cesarean sections in the last twelve years, and none under cyclopropane. One death was due to embolus on the thirteenth postoperative day.

It is of the utmost importance that the patient be provided with a good airway during cyclopropane anesthesia. Relaxation of the tongue and shallow chest excursions make it imperative that the patient receive adequate amounts of oxygen. Our custom is to introduce an ordinary flat pharyngeal airway in every case as soon as anesthetization has been obtained, which is usually from four to seven minutes after the beginning of induction. Griffith⁹ used endotracheal intubation in 1,567 of his 5,000 cases, or nearly 1 case out of every 3. In our last 3,103 cases we used the endotracheal technic in 71 instances. However, we use the method a good deal more than this figure would indicate, as we are not counting our nitrous oxide and ether cases in this series. We are using the intratracheal tubes more and more, but up to the present we reserve intubation for the more difficult cases, and we insert the tubes usually in the beginning, after induction, rather than after surgery has begun. We use the tubes in all lung surgery, and in work around the throat, neck and mouth.

It has been found that cyclopropane combined with basal avertin with amylene hydrate makes an excellent combination anesthesia for toxic thyroid surgery. We used this technic in 92 cases with excellent results. Avertin with amylene hydrate was used in a further 19 cases in combination with cyclopropane when it was considered wise to bring the patient to the operating room under basal anesthesia. It has been found that cyclopropane is very useful as an adjunct to spinal anesthesia. When a patient receiving spinal anesthesia is too alert and nervous or when the spinal agent is beginning to wear off, one may give comparatively small amounts of cyclopropane and at the same time keep up the concentration of oxygen which is so desirable in spinal anesthesia.

We agree thoroughly with Griffith, Guedel and Waters and Schmidt¹⁶ that cyclopropane is the anesthetic of choice in poor cardiac risks. We have also found that Hathaway's figures on respiratory morbidity are well founded. He states that following cyclopropane, ether and nitrous oxide anesthesia the percentage morbidity in chest complications is 1.08, 2.06 and 2.17.

At the Rochester General Hospital we use the carbon dioxide absorption technic in nearly every case. However, there are times in cyclopropane anesthesia when one wants to let the patient have his own carbon dioxide or to supply him with some. The use of the carbon dioxide absorption technic with the closed system allows us to save cyclopropane, which is, as is well known, an expensive gas. After anesthesia has been obtained one may use as little as 40 to 150 cc. a minute to maintain anesthesia, with occasional supplements of larger amounts at intervals, depending on circumstances. A basal flow of oxygen of from 250 to 500 cc. a minute is constantly maintained. We believe that it is possible to give as many anesthetics with 10 dollars' worth of cyclopropane as it is with 10 dollars' worth of nitrous oxide.

Preoperatively we use morphine, scopolamine, soluble pentobarbital, seconal (sodium propylmethylallylbarbiturate) and combinations of these drugs, as we found out long ago that a much smoother anesthesia is obtained if the patient comes to the operating room under proper medication. Induction is easier, and the deep relaxation necessary for certain abdominal surgery is obtained with greater security. Robbins¹⁷ has considered premedication in detail, and he has shown that if barbiturates are given preoperatively there is less tendency toward the development of arrhythmia. Cyclopropane does not abolish muscular tone when given to a depth necessary to establish complete relaxation, as does ether. For a detailed account of the administration of cyclopropane under various circumstances we refer the reader to Guedel's paper.

As stated previously, we introduce an airway in every case as soon as anesthesia has been induced. We have found that helium is often of considerable help in carrying the cyclopropane and oxygen through a compressed trachea or other obstruction to the airway. We also use helium occasionally toward the end of an operation, particularly a longer one.

Fortunately, in cyclopropane anesthesia respiratory arrest comes on before cardiac failure. This must be treated by passive respiration until active breathing returns. We feel that as long as the pulse remains over 50 the patient is not in immediate danger, but with slowing of the pulse we advance the oxygen intake. According to Allen, Stutzman and Meek,¹⁸ cyclopropane renders the heart sensitive to epinephrine. The result is that small amounts of epinephrine which are liberated during the excitement of coming to the operating room, and which ordinarily do not have any particular effect, act and produce arrhythmias. Extrasystoles are not at all unusual in this type of anesthesia, but they are not cause for alarm if respirations are even, if the pulse is over 50, and if the A-C-R reacts properly. It is well known now that one must not give drugs preoperatively that increase sympathetic tonus.

We find that cyclopropane is well tolerated by all age groups and we have no hesitation in using it with very old patients.

Finally, a few words about "cyclo shock." We have noticed many times now that a patient who has had what might be called moderate surgery with an average amount of cyclopropane will sometimes go into collapse thirty minutes to three hours after being taken back

15. Sahler, S. LeRoy: Anesthesia in Cesarean Sections During Twelve Years at the Rochester General Hospital, *Anesth. & Analg.* 18: 80 81 (March-April) 1939.

16. Waters, R. M., and Schmidt, E. R.: Cyclopropane Anesthesia, *J. A. M. A.* 103: 975 983 (Sept. 29) 1934.

17. Robbins, B. H.: Preanesthetic Medication, *Arch. Surg.* 40: 1044 1056 (June) 1940.

18. Allen, C. R.; Stutzman, J. W., and Meek, W. J.: The Production of Ventricular Tachycardia by Adrenalin in Cyclopropane Anesthesia, *Anesthesiology* 1: 158 166 (Sept.) 1940.

to his room. This collapse can always be prevented or at least alleviated in large measure by the exhibition of intravenous dextrose immediately on returning to the patient's room. We use intravenous fluids in good measure in all cases of cyclopropane anesthesia of any duration and when the surgery has been of any magnitude. Since employing these prophylactic measures we have found fewer cases of "cyclo shock."

POINTS TO BE CONSIDERED

The following points are, in our opinion, the more important ones to be considered in cyclopropane anesthesia:

1. Maintain an open airway. Use a pharyngeal tube in all cases, and an endotracheal tube when the occasion warrants it.

2. Always be on the alert for apnea, and, when it arises, maintain passive respiration until active respiration reappears.

3. In induction, adjust the mask tightly before opening the cyclopropane valve. Fill the bag half full of oxygen, and after the patient has had a few breaths introduce cyclopropane at the rate of 600 to 700 cc. a minute. After anesthesia has been established, cut down the cyclopropane flow to 40 to 150 cc. a minute but keep the oxygen flow at 250 to 500 cc. a minute. Introduce larger amounts of cyclopropane, depending on relaxation and breathing. A good level of anesthesia will be reached when the muscles of the face and neck are relaxed, when breathing is slow and rather shallow and when the abdominal muscles are soft, as reported to the anesthetist by the surgeon.

4. Do not administer sympathetotonic drugs preoperatively.

5. Give adequate preoperative medication.

6. Do not use any more cyclopropane than is necessary; the larger the amount used, the greater will be the degree of "cyclo shock."

7. Be on the watch for "cyclo shock" during the first half hour to four hours postoperatively and administer adequate amounts of acacia, dextrose and saline solution to all patients who have had cyclopropane in major surgery which has lasted longer than the average time for the given procedure.

8. When the operation has been of considerable duration, always use carbon dioxide inhalation intermittently for from twenty-four to forty-eight hours.

9. Use the carbon dioxide absorption technic in giving cyclopropane routinely but not exclusively. Carbon dioxide is useful during cyclopropane anesthesia at times.

10. Helium is useful as a carrier of cyclopropane and oxygen through a partially obstructed airway. It is also of value in decreasing the explosibility of the cyclopropane-oxygen mixture.

11. Have suction available, conducted through the wall of the operating room and not obtained by means of a suction machine close at hand.

12. Remember, a pulse rate below 50 indicates that the patient has had sufficient cyclopropane; it does not mean that the patient is in a dangerous position, but oxygen should be given at once in full concentration.

13. Ascertain in every case before operation whether the cautery or x-ray or endoscopic apparatus is to be used; if so, use another gas if inhalation anesthesia is required.

14. There has been no mortality in the 7,120 cases, but there has been an influence by cyclopropane on morbidity, we feel sure. We do not feel that a single case of death has been due to cyclopropane alone.

15. There is no hard and fast rule in the conduct of cyclopropane anesthesia. Each case must be handled individually and as an entity in itself. With reasonable experience the technic of cyclopropane anesthesia is not difficult; but it does require assiduous attention to the various points enumerated.

Medical Arts Building.

THE CONTRACEPTIVE SERVICE OF THE DEPARTMENT OF HEALTH, CITY OF NASHVILLE

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AND

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NASHVILLE, TENN.

In November 1937 the health department of the city of Nashville opened a contraceptive clinic for indigent women. Health and economic conditions among the underprivileged of Nashville accentuated the need for lessening the high frequency of conception in this group. Appreciation of the difficulties of prescribing diaphragm and jelly for indigent multiparas led to the decision to provide a substitute method for women difficult to fit or otherwise unable to employ the diaphragm. Foam powder was chosen for its apparent simplicity, its low cost and its reported effectiveness in early trials elsewhere. Although the physician in charge of the clinic exercised no rigorous selection of cases, he did tend to prescribe foam powder for the apparently less intelligent and for patients having a relaxed pelvic floor or presenting other conditions prejudicial to successful fitting, insertion or retention of the diaphragm in situ.

The first clinic admitted only white patients, but two clinics for Negroes were opened in 1940. Under a policy of expansion and decentralization the original clinic was closed in April 1940, after having admitted 733 patients, of whom 6 were referred for sterilization. The active cases among them were distributed to the decentralized clinics, of which there were four on June 1, 1941. Prior to this date 1,607 white and Negro patients had been given contraceptive advice.

A sample of the histories was examined in 1938 by the National Committee on Maternal Health with the expectation that the pioneer service might furnish data of considerable importance for clinical contraception. The service appeared exceptional in its provision of two methods, its integration with other public health services and its exceptionally intensive follow-up by public health nurses. The present report summarizes the experience of the original clinic and reaches some conclusions about the relative usefulness of the two methods prescribed.¹ The latter takes on special interest in the face of the current effort by birth control enthusiasts to encourage widespread use of foam powder.

THE PATIENTS

Contraceptive services are seldom, if ever, patterned along the lines of biologic experiments, with an "untreated" sample for control, and it has become customary to evaluate their influence by contrasting the

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1. It should be borne in mind that the service was not planned to test the two methods for the particular set of patients. Consequently, from the standpoint of experimental control the data present shortcomings which are of little or no relevance to the efficiency of the service *qua* service.

fertility of patients before and after admission. In this study the histories prior to admission must be examined intensively not only to facilitate comparison with the later period but also in order to explore the comparability of the two groups advised in the use of different methods.

TABLE 1.—*Characteristics of Patients Given Contraceptive Advice, by Method Prescribed*

Characteristic	Method Prescribed		Total
	Diaphragm and Jelly	Foam Powder	
Number of women	410	317	727
Mean age at admission	25.6*	28.0	26.7
Mean duration of marriage at admission	7.3	9.5	8.3
Mean educational attainment of wife†	7.6	6.9	7.4
Percentage with privately employed husbands	65	57	61
Percentage with husbands employed on relief projects	17	21	19
Mean weekly family income, in dollars	11.2	10.8	11.0
Percentage on home relief	21	27	23
Mean gravidity	3.5	4.6	4.0
Mean parity	3.2	4.1	3.6
Mean family size	4.9	5.8	5.3
Fertility index‡	0.41	0.41	0.41
Percentage with contraceptive experience	65	65	65

* Values in boldface are significantly different in the statistical sense

† In years of schooling

‡ Births per year of married life

A summary of the main features of these histories is given in table 1 separately for each method group. Horizontal pairs of values in boldface may be regarded as significantly different in the statistical sense.² Five of the differences merely reflect the fact that the foam powder patients were, on the average, two or three years older than those advised to use diaphragm and jelly. The differences in duration of marriage, gravidity, parity and family size repeat the age difference. The important point is that relative fertility, as measured by births per year of marriage, is the same for the two groups. Patients who had experienced pregnancy and childbirth more than the average number of times more frequently presented apparent contraindications to the diaphragm prescription and thus entered the foam powder group in greater numbers. The possible implications of this selection are manifold, but they furnish no reason for regarding the two groups as essentially different in inherent fecundity or in the desire and ability to control conception.

The superior education of the diaphragm and jelly patients is also consistent with the process of selection but difficult to evaluate. There is a difference of seventenths grade between the two means, and the diaphragm and jelly cases include a third with more than eight years of schooling in comparison with a fifth of the foam powder patients. While the difference between means is not large, the proportions entering high school suggest that the two groups may differ in motivation, intelligence and other characteristics associated with contraceptive efficiency. On the other hand, the homogeneity of the two groups with respect to relative fertility and resort to contraception is inconsistent with the assumption of effective differences in contraceptive interest and skill. The educational differential seems an insufficient basis for regarding the two groups as incomparable.

2 A difference is called statistically significant here when it is of a magnitude which might be expected to arise by chance five times or less in a hundred trials ($P \leq 0.05$). In the absence of a contrary statement, any difference or other relationship given in the text has been subjected to a statistical test believed appropriate and has been found to be reliable in this sense.

Although the two groups are not entirely homogeneous, therefore, the statistical analysis suggests no reason why there should be any appreciable differences in fertility under similar circumstances. To the extent that this interpretation is justified, the subsequent experience of the two method groups provides a direct test of the relative suitability of the two methods for the type of patient admitted to the service. Since their comparability is not firmly established,³ conclusions must be regarded as tentative.

The relative fertility of several other groups of contraceptive patients with little previous contraceptive experience is given in table 2 by residence and color. The Nashville rate of 0.41 is well within the range of 0.40 to 0.47 obtained for samples drawn from areas of extremely high fertility. A majority of the patients avowed at least some effort to control conception, the proportions, however, being above average for those favored by superior education, income and employment status. The fertility rates of table 2 show how little their previous contraceptive endeavors had lowered the fertility of these patients before admission to the service.

ACCEPTANCE OF PRESCRIBED METHODS

Only 5 per cent of the patients failed to try either diaphragm and jelly⁴ or foam powder and sponge⁵ as prescribed, and the difference between the two groups is insignificant. Immediately thereafter, however, the foam powder patients displayed less willingness to employ the prescribed method, as may be seen in the accompanying chart. This shows, for example, that after six months of exposure (perhaps eight or nine months after admission) less than 55 per cent of the foam powder patients were still using the prescription in comparison with more than 75 per cent of the diaphragm and jelly patients. At the end of twelve months of exposure the percentages had fallen to about 35 and 60. The great discrepancy between the two curves is partly illuminated by the reasons for discontinuance, shown in table 3. One important factor is reported as

TABLE 2.—*Comparative Fertility of Patients of Little Contraceptive Experience Prior to Admission to Several Contraceptive Services, by Residence and Color*

Residence, Series and Color	Births per Year of Married Life
Urban	
Nashville, Negroes	0.46
Nashville, whites	0.41
Puerto Rico, unspecified	
J. S. Fertility and Control	
Puerto Rico J. Pub. Health & Trop. Med., to be published	0.41
Rural	
Puerto Rico, unspecified (Beebe and Belaval)	0.47
West Virginia, whites (Beebe, G. W. Fertility and Contraception in the Southern Appalachians to be published by Willis)	0.44
Tennessee, whites (Geisler)	
Alone Series in Rural Tennessee, unpublished	0.41
Kentucky, whites (Beebe, G. W., and Geisler, M. A.: Control of Conception in a Selected Rural Sample, Human Biology, to be published)	0.40

"burning." Ten per cent of the foam powder patients and 1 per cent of the diaphragm and jelly patients stopped because of "burning." Another outstanding

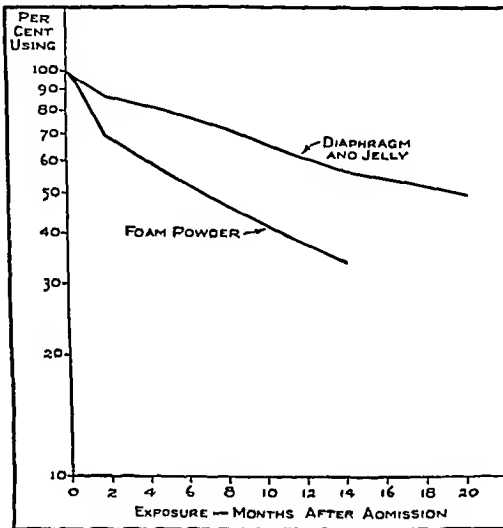
3 As it would be under appropriate conditions of random selection of patients for the two methods.

4 The following commercial jellies and creams were prescribed in the clinic: Cooper Creme, Holland Rantos Emulsion Jelly, Koromex Jelly, Lactinol Creme, Lactinol B and Ramses Jelly.

5 P. S. Foam Powder was advised. The manufacturer, Philip Stoughton of New York City, gives the quantitative formula, on the basis of weight, as cornstarch 84.25 per cent, Duponol W. A. 14 per cent and paraformaldehyde 1.75 per cent. Duponol W. A. is a commercial detergent obtained by sulfonating technical lauryl alcohol.

difference in the table centers on the combination of lack of confidence, preference for another method, and change of prescription,⁶ for which the relative losses are 18 and 7 per cent. The third major source of variation is the relative frequency of conception during use of the prescription. The percentages of 16 and 8 suggest that foam powder may have provided materially less protection than diaphragm and jelly. Each of these three differences is statistically reliable and, taken together, they explain most of the divergence in the curves shown. Noteworthy for both groups are the low percentages of cessation associated with apathy, moral or religious objection, belief in protection from lactation or some pathologic condition, and esthetic objections.

The two method groups differ appreciably in their dependence on the prescribed methods after admission to the service. Table 4 gives the percentages of patients reporting several types of contraceptive experience and shows that more patients relied exclusively on dia-



Decline in percentage using prescribed methods

phragm and jelly than on foam powder. Measured as a percentage of all exposure after admission, the relative dependence on diaphragm and jelly was 78 per cent and on foam powder 64 per cent. The slightly greater resort to other methods of contraception on the part of the foam powder patients is not statistically reliable. The two groups substituted essentially the same methods for that advised, withdrawal and condom being most frequent and douche rather infrequent. It will also be noted from table 4 that the two groups differ only insignificantly in their failure to take contraceptive precautions at any time after admission. If the foam powder patients more frequently experienced conception, of course, they would be expected to refrain from contraception more often simply because of postpartum amenorrhea and lactation. The two groups do differ significantly, however, in the extent to which the initial prescription was subsequently changed. Two per cent of the diaphragm and jelly patients and 15 per cent of the foam powder patients were given other methods.

Whatever index of acceptance after trial is employed, therefore, the foam powder method appears to have been definitely less suitable for the patients advised in its use than is true of the diaphragm and jelly method. While the interpretation of this finding is obscured

by the selection of the patients, at several important points the hypothesis of homogeneity of the method groups as to basic contraceptive motivation and ability withstands statistical test. If the two groups differ widely in these respects, they should also differ in resort to other methods of contraception and in failure

TABLE 3—Percentage of Patients Abandoning Prescription for Stated Reasons, by Method Prescribed

Reason	Method Prescribed		Total
	Diaphragm and Jelly	Foam Powder	
Unknown	3	1	2
Burning	1	10	5
Other pain or discomfort	4	5	4
Esthetic objection, e.g., messiness	*	*	*
No confidence, preference for another, or prescription changed	7	18	11
Apathy	3	2	3
Moral or religious objection	*	*	*
Conceived during use of prescription	8	16	12
Out of exposure, and so on	11	11	11
Risk of conception thought negligible	*	1	*
Out of supplies	7	6	7
Total	44.5	70.7	55.7
Number of patients followed up	400	600	700

* Less than 0.5 per cent

to adopt precautions. Table 4 gives no support to this view. Moreover, the fact that many more of the foam powder than of the diaphragm and jelly patients petitioned for a different prescription does not accord with the view that the former were less highly motivated. Finally, the two method groups are homogeneous with respect to the proportion who, after abandoning the prescription, failed to take up any other method within the period of follow-up. Thus the analysis of the contraceptive experience after, as well as before, admission to the service gives no reason to abandon the position⁷ that a comparison of the experience of the two groups throws light on the relative utility of the two methods for the type of patient admitted to this service.

EFFECTIVENESS OF PRESCRIBED METHODS

In formal analysis it is useful to make a distinction between the acceptance of a prescription and the protection obtained from its use, but the two elements are clinically inseparable. This is illustrated by the asso-

TABLE 4—Percentage of Patients with Specific Contraceptive Behavior After Admission, by Method Prescribed

Contraceptive Behavior *	Method Prescribed †		Total
	Diaphragm and Jelly	Foam Powder	
All exposure with prescription	46	37	42
At least part of exposure with other contraceptive methods	38	42	40
At least part of exposure with no contraception	25	33	29

* The classification permits overlapping.

† Values in boldface are significantly different.

ciation between unwillingness to continue foam powder and lack of confidence in its effectiveness. Contraceptive effectiveness may be defined in terms of reduction in the chance of conception. If the expected risk of conception is R , and the observed risk R' , then the difference $R - R'$ measures the reduction, which may be

7 The statistically minded reader will appreciate the fact that no amount of statistical testing can prove the homogeneity of two groups of patients. Insignificance in such tests merely provides no reason to reject the hypothesis of homogeneity.

6 These interrelated elements were not separated in the coding.

stated in relative form by means of the expression $100 \times \frac{R-R'}{R}$. If the expected risk R is taken as that which would have obtained had no contraceptive been employed, then $100 \times \frac{R-R'}{R}$ may be said to measure the effectiveness of the particular contraceptive practice giving rise to the risk R' . This definition makes no statements about an invariant, physiologic "effectiveness," but refers to observable clinical experience representing, as it does, the physiologic action of the contraceptive modified by whatever competence and diligence the patients manifest. At present the physiologic and the behavioral components of risk cannot be separated clinically, and only measures of use effectiveness are possible.

To apply this procedure, essentially that of Stix and Notestein,⁸ a statistic is required for estimating the chance of conception. The best available device is the pregnancy rate invented by Pearl.⁹ In its most general form the pregnancy rate may be stated as

$$Rp = \frac{\text{number of conceptions}}{\text{number of possibilities for conception}}$$

The particular rate employed here defines as the unit of possibility for conception the exposure month, an elapsed month in the married life of a patient during

frequently endeavor to isolate the conceptions which apparently intervened despite the regular and competent use of a prescribed method, but the desired estimates of risk require that the exposure meeting these criteria also be isolated. The latter is virtually impossible in a series such as the present one. Parenthetically it may be noted that 18 per cent of the diaphragm and jelly conceptions, and 31 per cent of the foam powder conceptions, were asserted by the patients to have occurred despite their regular and competent use. In 72 per cent of such instances the history shows that the nurse did not believe the patient. The director of the nursing service maintains the view, based on her intensive study of individual cases, that neither method has yet "failed," in the physiologic sense, any patient in the series.

The measurement of effectiveness requires an estimate of the uncontrolled chance of conception. The data on gravidity, parity and duration of marriage provide the basis for an estimate of seventy-five pregnancies per hundred woman years of exposure, which checks closely with other series in which more precise estimates have been made. Table 5 gives the pregnancy rates and the relative efficiency for each method. Allowance for minor variation in the expected rate could in no way disturb the conclusion that the effectiveness of diaphragm and jelly greatly exceeded that of foam powder. On the other hand, it is evident that the 88 per cent protection obtained with diaphragm and jelly is higher than might have been anticipated from previous studies, for it approximates the protection reported for a private practice series¹¹ and for outstanding urban clinics¹² ministering to the needs of women of greater economic and social privilege. The foam powder protection of 63 per cent is also very real, and the combined effectiveness of the two methods represents definitely superior protection. One reason for the generally favorable result is believed to be the intensive care which the patients received from public health nurses, for the average diaphragm and jelly patient was seen nine and three-tenths times during fifteen and five-tenths months of follow-up and the average foam powder patient eight and one-tenth times in fifteen and three-tenths months. Without the frequent home visits and the skilful nursing made possible by incorporating the contraceptive service into the general public health program and by the exceptional interest of the director of the nursing service, far less than 80 per cent protection would probably have been achieved.

The difference in effectiveness is both large and independent of any differences between the groups with respect to education, income, prior contraceptive experience and duration of marriage. The selection of the foam powder patients for greater age, parity and gravidity should tend to yield a group slightly below average reproductive capacity,¹³ for the relative fertility of the two groups was the same before admission. The latter finding makes highly improbable the existence of any real physiologic difference, e. g. a gaping os uteri or other gynecologic condition which might diminish the occlusive power of the foam and sponge and thus prejudice the result. Moreover, the foam powder patients actually experienced an insignificantly lower

TABLE 5.—Relative Effectiveness of Prescribed Methods

Prescription	Experience with Prescription		Expected Rate * on Assumption of No Contraception (Estimated)	Percentage Effectiveness
	Exposure, in Months	Conceptions		
Diaphragm and jelly	4,336	32	9	75
Foam powder	2,470	57	28	75
Total	6,812	89	16	75

* Pregnancies per hundred woman years of exposure to the chance of conception, or $Rp = 1,200 \times (\text{conceptions/exposure months})$

which conception was physiologically possible. In other words, from the time during which the patient was under observation, deductions are made for months of gestation, puerperium, abstinence and the like, and exposure is considered to be terminated by sterilization of either partner or by the menopause. The remainder, a number of months, may be called the exposure of the particular patient. In each exposure month, conception either did or did not occur, and both conceptions and exposure months may be classified in any way justified by the character of the clinical observations. The statistical measure employed here to describe the chance of conception may thus be defined as

$$\text{Pregnancy rate} = 1,200 \times \frac{\text{number of conceptions}}{\text{number of exposure months}}$$

which gives the pregnancies per hundred woman years of exposure to the chance of conception. The rate is computed not for individuals but for groups of patients.

The clinician would like estimates of the chance of conception under conditions of perfectly regular and competent use. These would have considerable value for both research and clinical practice, but reliable observations permitting such a classification of clinical experience have yet to be obtained.¹⁰ Investigators

8. Stix, Regine K., and Notestein, F. W.: Effectiveness of Birth Control, *Milbank Memorial Fund Quarterly* 13: 162 178 (April) 1935.

9. Pearl, Raymond: Contraception and Fertility in 2,000 Women, *Human Biology* 4: 363 407 (Sept.) 1932.

10. In this study, as in others under the auspices of the National Committee on Maternal Health, such estimates have been attempted but without success. For example, in coding the Nashville histories it was found that virtually all patients claimed regular use until conception occurred, after which admissions of irregularity were frequently made for experience previously alleged to have been regular.

11. Deves, Lovett, and Beebe, G. W.: Contraception in Private Practice, *J. A. M. A.* 110: 1169 1172 (April 9) 1938.

12. Stix, Regine K.: Birth Control in a Midwestern City, *Milbank Memorial Fund Quarterly* 17: 69 91 (Jan.), 152 169 (April), 392 423 (Oct.) 1939.

13. Stix, Regine K., and Notestein, F. W.: Controlled Fertility, Baltimore, Williams & Wilkins Company, 1940.

13. Stix, Regine K.: The Medical Aspects of Variations in Fertility, *Am. J. Obst. & Gynec.* 35: 571 580 (April) 1938.

chance of conception when they did not use the prescription than is true of the diaphragm and jelly patients. Finally, the pregnancy rates for women classified by education and income differ only insignificantly within each method group, whereas the rates for the two methods are very different for women of similar education, income and prior contraceptive experience. It is plain that the educational differential noted earlier in the paper exerts no sensible influence on the result observed. From the standpoint of both the physiologic and the psychologic determinants of protection, therefore, the evidence sustains the position that the two method groups are comparable and that their differential success may be attributed to the methods prescribed.

THE TOTAL CONTRIBUTION OF THE SERVICE

Evaluation of the total contribution of a contraceptive service must recognize that the needs for protection which patients present on admission do not vanish on their rejection of an initial prescription. Only the examination of a representative portion of their experience after admission to the service, chosen without regard for their acceptance of prescribed methods, con-

expected in the absence of any contraceptive practice is $100 \times (75 - 22) \div 75$, or 71 per cent. This is a very generous estimate of the contribution of the service, for undoubtedly some effort would have been made to control conception if the service had not been made available. The only estimate which the observations themselves provide is the rate of 40 calculated for the exposure during which the prescribed methods were not employed. In view of the high risk found for the period before enlistment it seems doubtful that a pregnancy rate as low as 40 could have been achieved without the aid of the service. Hence the use of this rate in estimating the contribution of the service is surely conservative. On this basis the gain in protection is 45 per cent for the entire series, 55 per cent for the diaphragm and jelly patients and 28 per cent for the foam powder patients.

SUMMARY AND INTERPRETATION

The observations reported here demonstrate the possibility of very extensive fertility control in Nashville among indigent white patients selected for high fertility and interest in family limitation. Despite a ready willingness to try the methods advised, however, neither

TABLE 6.—*Chance of Conception Following Admission, by Contraceptive Practice and by Method Prescribed*

Prescription	Prescription Employed,* Rate †	Prescription Not Employed			Total Experience After Admission				
		Exposure In Months	Pregnancies	Rate †	Exposure in Months	Pregnancies	Rate †	Per Cent Reduction	
Diaphragm and jelly.....	9	1,206	49	49	5,542	81	18	76	55
Foam powder.....	28	1,401	38	33	3,877	95	29	61	28
Both methods.....	18	2,607	87	40	9,419	176	22	71	45

* Rates from table 5.

† Pregnancies per hundred woman years of exposure.

‡ Both rates are estimates of the risk these patients would have experienced if they had never been admitted to the service. The rate of 75 assumes that no contraception would have been practiced; the rate of 40 assumes fairly efficient and extensive practice of contraception. See text for further details.

stitutes an adequate basis for its evaluation. Completion of the present analysis, therefore, requires the presentation of the exposure and pregnancies while the prescriptions were not followed. Then the average chance of conception during the entire follow-up period may be compared with an estimate of the rate which would have obtained if the service had not been instituted.

An active service tends to drop patients unwilling to continue with prescribed methods and thus to limit its access to that part of the experience which lies beyond the control of the prescribed methods. This is also true of the Nashville service. It implies that over a longer period of observation, with a random or complete follow-up, different pregnancy rates might be obtained for the total experience and for that portion of it which does not involve the use of prescribed methods.

The supplementary data appear in table 6. The additional experience represents the use of different methods as well as some exposure during which no effort at protection was made. The rates for the two groups are 49 and 33, and for the amounts of exposure involved the difference is not statistically reliable. These rates clearly show the influence of fairly extensive efforts to control conception. The total rates of 18 and 29 summarize all the experience after enlistment for the two method groups, and the rate of 22 does this for all the patients advised. During the entire follow-up period, therefore, the total reduction below the risk

diaphragm and jelly nor foam powder and sponge proved sufficiently acceptable to prevent patients from rapidly leaving the service. The difficulty is not new; it pervades all contraceptive services organized on the basis of a single or central method, usually diaphragm and jelly. More individualized prescription¹⁴ of a wider variety of methods might make the service more effective, as would any change which reduced the likelihood of irritation or other pain and discomfort or which enhanced confidence in the technics prescribed.

Comparison of the two prescriptions presents certain hazards because foam powder was advised for patients for whom the diaphragm method was deemed unsuitable. Detailed comparison at many points, however, supports the view that the two method groups are alike in their uncontrolled pregnancy risk and in their contraceptive skill and interest. Diaphragm and jelly proved much more acceptable to patients advised in its use than did foam powder. Examination of other aspects of the contraceptive endeavor of each group furnishes no reason to believe that the apparent superiority of diaphragm and jelly is not real. The protection received from diaphragm and jelly also exceeded that obtained from foam powder by a wide margin, the effectiveness percentages being 88 and 63. Analysis of the factors influencing the chance of conception within each method group leaves little doubt that the difference is one of methods rather than one of patients.

14. Dickinson, R. L.: Control of Conception, ed. 2, Baltimore, Williams & Wilkins Company, 1938.

Clinical Notes, Suggestions and New Instruments

NEAR FATAL REACTION TO TRANSFUSION WITH DRIED HUMAN PLASMA SOLUTION

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The following case is reported in support of our contention that, except in dire emergencies, cross matching tests should be performed with the patient's blood prior to each and every transfusion, whether whole blood or plasma is used.

A. N., aged 29, white, a housewife, was admitted in labor to the Prospect Heights Hospital on July 1, 1941. In her early months of pregnancy she had suffered from persistent vomiting, which, however, subsided with the usual therapy. On admission to the hospital she stated that labor had begun at 4 a. m. that day and that the membranes had ruptured two hours later. The essential observations on physical examination were as follows: The patient was in active labor with the fetus in the left occipito-anterior position. The vital signs were normal. There was a functional mitral presystolic murmur. A blood count showed the following: red blood cells 4,340,000 per cubic millimeter, hemoglobin 58 per cent, white blood cells 10,200 with 66 per cent polymorphonuclear cells, 33 per cent lymphocytes and 1 per cent eosinophils. The urine showed an alkaline reaction, a specific gravity of 1.014, a slight trace of albumin without casts and about 1 to 2 red blood cells per high power field.

Labor progressed normally and at about 4 p. m. on the day of admission the cervix was completely dilated. Two hours later the patient was delivered spontaneously of a normal female infant by left occipitoanterior presentation. The placenta was also expelled spontaneously, approximately fifteen minutes later. The general condition of the patient was good when she was returned to her room. The uterine fundus was firm and there was only a moderate amount of bleeding, which subsided completely by 9 p. m. About 6:30 a. m. the next day profuse vaginal bleeding was noted. It could not be definitely determined just when during the night bleeding had commenced. On examination at 7 a. m., the patient presented the usual clinical manifestation of severe loss of blood and the uterus was palpable at the umbilicus. Ergot by hypodermic was given at once, followed by a uterine stimulant by mouth, which was to be repeated three times during the day. She was also given an intravenous injection of 1,000 cc. of 10 per cent dextrose in saline solution while preparations were being made for a blood transfusion. Because a compatible blood donor was not immediately available, it was decided to give the patient 250 cc. of normal human plasma ("Lyovac" Rapidly Lyophilized Normal Human Plasma, Sharp and Dohme) which had been kept available for just such an emergency. In the meantime, the patient was reacting satisfactorily and, prior to the administration of the plasma, had improved considerably. The plasma was diluted and administered exactly as specified in the directions accompanying the outfit. No cross matching tests were performed, since the circularized instructions on the use of the plasma specifically state that such tests are entirely unnecessary. The injection of the plasma was slow, having lasted about an hour and fifteen minutes. About twenty minutes after the completion of the transfusion the patient suddenly experienced a chill, which was accompanied by nausea and vomiting. The pulse rate rose to 160 a minute and the patient repeatedly expressed fear of impending death. The poor condition and general appearance of the patient, as was later admitted by the attending physician, convinced him also that death was impending. The patient presented a typical picture of acute shock. Her face was ashen gray and her skin cold and clammy. Her voice was feeble and her pulse almost imperceptible. She

was given 1 cc. of epinephrine and caffeine with sodium benzoate by hypodermic as well as applications of external heat. The reaction lasted about thirty minutes, then began to subside. Her color gradually improved and the pulse rate dropped to 100 a minute. The weakness, however, persisted for a number of hours.

The following day a whole blood transfusion of 500 cc. was given to the patient without any untoward results. The donor was her brother, also of group A, and his blood was found to be compatible with her blood on cross matching prior to the transfusion. Following this, she made an uneventful recovery and was discharged cured on the tenth hospital day.

A catheterized specimen of urine, which was obtained immediately after the reaction, showed 1 to 2 red blood cells per high power microscopic field. Since similar conditions were noted on admission, they cannot be ascribed to the transfusion reaction. However, subsequent examination showed a persistence of the hematuria, which at times became exacerbated. Thus, on the fifth day after the reaction the urine continued to show albumin, a moderate number of hyaline and granular casts and many more red cells than had been noticed previously. The urinary conditions did not return to normal until just before her discharge from the hospital.

As soon as the reaction occurred, the laboratory was called on to determine, if possible, the cause of the accident. The usual routine "check-up" tests were then performed, consisting of the regrouping of the patient's blood, cross matching of the patient's cells and plasma solution, as well as various tests on the plasma for atypical agglutinins or hemolysins, and for formed elements including bacteria and the like. Fortunately we had in our possession a sample of the patient's blood which was obtained prior to the plasma transfusion. (This specimen of blood had been obtained with the intention of grouping and cross matching for a whole blood transfusion, which was the original intention of the attending physician. Since no compatible donor was available at the moment, however, it was decided to give the patient a plasma transfusion instead.) Examination of this specimen of blood showed it to be group A (MN) and on being mixed with a sample of the plasma solution which had been salvaged from the flask from which the patient received the plasma transfusion a most pronounced and immediate agglutination of the red blood cells occurred. Various dilutions of this plasma solution were then prepared, ranging from 1:2 to 1:8. These dilutions actually represented 1:4 to 1:16 dilutions of the original dry plasma, since the plasma solution that had been injected into the patient was prepared by dissolving the dry plasma in equal parts of distilled water. All dilutions up to and including 1:8 readily agglutinated the patient's cells in vitro. Similar results were obtained with fresh specimens of the patient's blood and the same dilutions of plasma. Apparently the transfusion reaction did not alter the patient's blood so as to mask the reactions in vitro. It is also noteworthy that dilutions of the plasma as high as 1:16 with water failed to hemolyze the patient's cells. These tests were performed with the direct coverslip preparation at room temperature as well as with the more sensitive centrifuge and incubation technic. The readings were all definite and recurred consistently with each repeated examination, leaving no doubt as to the validity of the observations.

The diluted plasma was also tested with the blood of 10 other persons, 6 of group A, 2 of group B and 2 of group O. It agglutinated the cells of all except those of group O, indicating that the responsible factor for the agglutination in vitro was not an individual one peculiar to the patient.

Studies made on the patient's blood and the plasma solution for the Rh factor, while disclosing that the patient was Rh positive, failed to show, however, any anti-Rh agglutinins in the plasma, or in the patient's serum. Furthermore, the plasma solution failed to agglutinate other known Rh positive bloods. The Rh factor, therefore, can be absolved from responsibility in the reaction that occurred in this case. The possibility of an isoimmunization by an antigen other than Rh during the course of her present pregnancy can also be excluded in this case, since the patient's serum failed to show any atypical agglutinins and also since the child is normal.

Dr. Philip Levine of the Beth Israel Hospital, Newark, N. J., cooperated by performing the Rh tests on the specimens of blood and plasma in this case.

From the Departments of Pathology and Obstetrics of Prospect Heights Hospital and the Department of Pathology of the Cumberland Hospital.

COMMENT AND CONCLUSION

Although the exact cause for the reaction in this case is not entirely clear, the evidence points strongly to an incompatibility between the patient's cells and the plasma solution injected. So pronounced an agglutination as occurred in vitro between the patient's blood and so highly a diluted plasma cannot be dismissed too lightly. While it is true that there was no decided hemolytic process observed after the reaction, the clinical picture was otherwise typical of a severe transfusion shock. Fortunately the reaction did not prove fatal. Certain it is, however, that if the agglutinative titer of the plasma (even though demonstrable in vitro only) had been known to the physician prior to the injection of the plasma, he would not have dared to proceed with the transfusion. With the knowledge of the results in this case as subsequently disclosed by the cross matching tests, even the most enthusiastic supporters of the theory that plasma may be safely given without cross matching would hesitate to inject this particular plasma solution. Obviously, unless pretransfusion cross matching tests are performed one cannot hope to be able to detect such potentially troublesome plasma solutions. Yet no one will deny that the patient is entitled to this added precaution whenever possible, despite the so-called factor of safety that has been built up about pooled plasma. Most of the plasma transfusions given today lend themselves to this precautionary measure, for in very few instances is the emergency so great that seconds count. Such dire emergencies are excluded from present consideration; all agree that such emergencies know no law.

In this case a cross matching test of the plasma with the patient's blood prior to the transfusion might have spared the patient a near-fatal reaction. It should serve as a warning against similar instances in the future.

DEATH FOLLOWING THE INTRAVENOUS ADMINISTRATION OF DIODRAST

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In view of the extensive and widespread use of radiopaque solutions in excretory urography, it is not surprising that numerous toxic effects of the solutions used have been reported. Nausea, vomiting, shock, urticaria, edema of the glottis, rhinitis and various other manifestations of hypersensitivity have been known to occur.¹ Arterial and venous thromboses resulting from the use of diodrast or a preparation similar to it have been reported in the American and foreign literature.² Fatalities following the intravenous use of diodrast, however, have been exceedingly rare, when it is considered that millions of these injections have been given.³ The occurrence of such a fatality forms the basis for this presentation.

REPORT OF CASE

Mrs. M. G., aged 67, was admitted to the medical wards of the Jewish Hospital on Oct. 23, 1941 for treatment of diabetes mellitus. She was known to have had diabetes for about fifteen years and had been attending the cardiac, metabolic, medical, arthritic and allergic outpatient departments of the hospital off and on for twenty years. Since her diabetes was only moderately well controlled she was hospitalized for standardization.

On admission she presented the usual symptoms that one would expect to find in an elderly woman suffering from uncontrolled diabetes, hypertensive heart disease and degenerative arthritis. She also complained of dyspnea and a chronic non-productive cough. There was no demonstrable cardiac failure. The heart was enlarged to the left, and systolic murmurs were heard at the apex and over the aortic area. Generalized

arteriosclerosis and hypertension were present. Preliminary laboratory studies revealed hyperglycemia, glycosuria and a moderate hypochromic anemia.

During an attempt to regulate her diabetes the dyspnea became more severe and basal rales and mild bilateral pleural effusion developed. Serial electrocardiograms revealed the presence of progressive myocardial damage. The electrocardiographic changes, together with the slowly developing cardiac failure and a rapid sedimentation rate, made us suspect the presence of a silent subacute myocardial infarction. Under rest and digitalization her cardiac status rapidly improved.

November 11, eighteen days after admission, an intravenous urogram was done with diodrast, because of a palpable tender right kidney. The film revealed kidney shadows that were normal in size and position, but because of inadequate outlining of the urinary tract a repeat urography was advised. On November 18 at 3 a. m., the patient had an attack which seemed similar in every respect to the asthmatic attacks she had experienced fifteen years previously. She had had no asthmatic seizures for many years. Within forty-eight hours the respiratory difficulty disappeared and physical examination of the chest became negative.

On November 20 she was sent to the x-ray department for another intravenous urogram. A few drops of the diodrast were placed under the tongue, and when no reaction became manifest in from ten to fifteen minutes injection of the diodrast was begun. The injection consisted of 25 cc. of 35 per cent diodrast given in a period of seven minutes. Within five minutes the patient became deeply cyanotic and had a convulsive seizure. Unconsciousness developed and respirations gradually decreased, though the pulse was still perceptible. Despite all attempts at resuscitation, including the use of epinephrine and artificial respiration, the patient died within twenty minutes of the beginning of the injection. Two features particularly noted at death were the deep cyanosis and the well defined hepatomegaly. The liver, which had been barely palpable that morning, was at death enlarged about 6 inches (15 cm.) beneath the right costal cage. Permission for autopsy was denied.

COMMENT

We believe that this patient suffered a fatal anaphylactic reaction following the intravenous injection of diodrast. Whether the first injection of diodrast nine days previously acted as a sensitizing dose we cannot say.

Cumming and Chittenden² listed 5 deaths that were allegedly due to contrast mediums used in excretory urography. One or perhaps 2 of these deaths may not be attributed directly to the solution injected. Crane⁴ reported 2 deaths due to the intravenous administration of diodrast. The 1 case in which an autopsy was done presented at autopsy a typical picture of anaphylactic shock. Dolan⁵ also reported a fatal anaphylactic reaction following the intravenous administration of but 3 cc. of diodrast. The case he reported bears a striking similarity to ours, and we concur completely in his presentation of the death as one due to allergy. Certainly it is not the concentration of the iodine or the speed of injection that is responsible. Robb and Steinberg⁶ have reported almost 500 injections of from 30 to 75 cc. of 75 per cent diodrast, injected within two seconds, without a serious reaction. At the Mayo Clinic,⁷ 25,000 intravenous injections of diodrast have been given without a fatality.

In view of the clinical picture presented by our case and the strong similarity to the one reported by Dolan, we feel that we should reemphasize his recommendations. A detailed allergic

From the medical wards of the Jewish Hospital.
1. Cumming, R. E., and Chittenden, G. E.: Intravenous and Retrograde Urography, *J. A. M. A.* 106: 602 (Feb. 22) 1936.

2. Boon, A. A., and Lindeloom, G. A.: Arterial Thrombosis After Intravenous Injection, *Arch. d. mal du coeur* 31: 1019 (Oct.) 1938. Cumming and Chittenden.¹

3. Diodrast, brochure published by Winthrop Chemical Company, Inc., August 1941.

4. Crane, J. J.: Sudden Death Following the Intravenous Administration of Diodrast, *J. Urol.* 42: 745 (Nov.) 1939.

5. Dolan, L. P.: Allergic Death Due to the Intravenous Use of Diodrast, *J. A. M. A.* 114: 139 (Jan 13) 1940.

6. Robb, G. P., and Steinberg, I.: Visualization of the Chambers of the Heart, *Am. J. Roentgenol.* 41: 1 (Jan.) 1939; Visualization of the Chambers of the Heart, *ibid.* 42: 14 (July) 1939; A Visualization Study of Fibrothorax, *Radiology* 33: 291 (Sept.) 1939; Visualization of the Chambers of the Heart, *J. A. M. A.* 114: 474 (Feb. 10) 1940.

7. Braasch, W. F., in discussion of Crane.⁴

history should be taken of every patient prior to excretory urography, and the methods for testing the patient's sensitivity discussed by Dolan should be rigidly adhered to.

SUMMARY

A fatality due to allergy followed the intravenous administration of diodrast. This is the ninth death recorded in the American literature. There should be extreme caution exercised in the intravenous use of this preparation in patients with a history of asthma or sensitivity to iodine.

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Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

NIKETHAMIDE.—Diethylamide of pyridine-3(β)carboxylic acid.—Pyridine-3(β)carboxylic acid diethylamide.—The diethylamide of nicotinic acid—N,N-diethyl nicotinamide.— $C_8H_{11}N.CON(C_2H_5)_2$.

Actions and Uses.—Experiments involving several species of animals indicate that the action of nikethamide is mainly on the central nervous system. In animals the drug appears to stimulate medullary centers, giving rise to an increased rate and depth of respiration and to peripheral vasoconstriction. Possibly the vasoconstriction may be in part due to a peripheral action of the drug. In animals its administration usually results in some increase in blood pressure, but this may be preceded by a temporary and sudden lowering of the pressure. Claims have been made for the use of nikethamide as an agent to raise blood pressure in human beings, but the results are not consistent; it has been suggested that any rise in blood pressure may be secondary to improved respiration and to stimulation of the reflex centers. Small doses in experimental animals exert no action on the coronary vessels, but larger doses may increase the coronary flow. However, clinical evidence for the use of nikethamide to promote increased coronary blood flow is not conclusive.

Nikethamide has been used clinically as a cardiac stimulant, but the majority of published reports do not reveal it to be especially efficient and it is probable that the cardiac effect does not depend on a direct action on the myocardium. Most experiments with carefully adjusted doses show no consistent increase in the amplitude of the heart beat, and any beneficial effect in cases associated with imperfect filling of the right side of the heart may be due to a respiratory effect leading to an increased oxygen exchange in the lung. The relief of respiratory distress in cardiac disease, as in paroxysmal dyspnea, may result from the effect on the respiratory system. At the present time there is no justification for the use of nikethamide in association with chronic myocardial failure, myocarditis, coronary disease (coronary thrombosis or coronary sclerosis) and angina pectoris. The analeptic action of nikethamide suggests its usefulness in combating acute respiratory depression from anesthetics, alcoholic intoxication and hypnotics. However, it is not clear that nikethamide is superior in this respect to other available drugs, especially in cases of barbiturate poisoning. Because of its additional action on peripheral vascular tone it appears to be of benefit in cases of acute circulatory failure occurring during the course of surgical procedures or pneumonia. However, nikethamide is contraindicated in pneumonia unless circulatory collapse supervenes.

Dosage.—Nikethamide is available as an aqueous solution, 25 per cent W/V, for oral and for subcutaneous, intramuscular or intravenous administration, but in emergencies no benefit can be expected from oral administration. The latter is usually true also for subcutaneous administration. The drug should preferably be given intravenously. Because nikethamide, after intravenous administration, is rapidly inactivated, the dose depends on the rate of injection. When doses larger than 3 cc. are given, the administration should be slow and the general reaction of the patient should be watched. It should be remembered that large or toxic doses produce convulsions and may cause death from respiratory failure. The dose may be repeated at intervals according to the needs of the patient.

Tests and Standards.—

Nikethamide occurs as a clear, colorless to very pale yellowish, somewhat viscous liquid, possessing a slight characteristic aromatic odor and a peculiar bitter taste. Nikethamide is miscible in all proportions with water, alcohol and ether. The refractive index of nikethamide is 1.522 to 1.524 at 25°C.; the specific gravity is not less than 1.058 nor more than 1.066 at 25°C. The p_H of a 25 per cent aqueous solution (W/V) of nikethamide made with freshly boiled and cooled distilled water is not below 6.0 or above 6.5, as determined by means of a glass electrode. Nikethamide freezes on standing in the cold and melts at from 20 to 26°C.; it resolidifies easily when cooled, provided some fragmentary crystals are present. Nikethamide boils at 128 to 129°C. under a pressure equivalent to 3 mm. of mercury, at 158 to 159°C. under a pressure equivalent to 10 mm. of mercury and at about 296 to 300°C. with some decomposition, under a pressure of one atmosphere.

Dissolve about 3.0 Gm. of nikethamide in 10 cc. of 10 per cent sodium hydroxide solution and warm on a water bath for thirty minutes; the solution yields the odor of diethylamine. Allow the solution to cool, acidify with dilute hydrochloric acid to a p_H of 3.6 (slightly acid to congo red); collect the fine, white precipitate on a filter, wash with water and recrystallize from 5 cc. of water; collect on a filter and dry at 100°C.; the nicotinic acid obtained melts at 235 to 238°C.

Heat a few drops of nikethamide with 1 Gm. of sodium carbonate a strong odor of pyridine results.

Dissolve 10 Gm. of nikethamide in 90 cc. of water; the solution is clear, nearly colorless and free from the odor of pyridine; it yields only a faint odor of diethylamine. The solution will respond to the following tests: Add to 5 cc. of solution 5 cc. of normal hydrochloric acid and 5 cc. of a solution made by dissolving 12 Gm. of potassium iodide, 3 Gm. of bismuth subnitrate and 3 cc. of concentrated nitric acid in sufficient water to make a volume of 50 cc.; a heavy reddish orange precipitate forms immediately. Add to 5 cc. of the solution 5 cc. of copper sulfate solution and 5 cc. of potassium thiocyanate solution; shake the mixture a flocculent light green precipitate forms. A 10 cc. portion of the solution is yellow on the addition of 5 drops of methyl red indicator (free acid) but turns red on the addition of 0.1 cc. of tenth normal hydrochloric acid (limit of free diethylamine). A 5 cc. portion of the solution becomes only faintly opalescent on the addition of 0.5 cc. of nitric acid and 0.5 cc. of silver nitrate solution (chloride).

Mix 5 cc. of the solution with 5 cc. of sulfuric acid, cool and cautiously overlay 5 cc. of ferrous ammonium sulfate solution; no brown color appears at the interface (nitrate). Add 5 drops of dilute sulfuric acid to 5 cc. of the solution; extract twice in a separatory funnel with 20 cc. portions of a mixture of 3 parts of chloroform and 1 part of isopropyl alcohol; combine the extracts, filter, evaporate to dryness on a steam bath and dissolve the dry residue in 10 cc. of boiling water. When the solution is cool, add 0.1 cc. of tenth normal sodium hydroxide and 1 drop of phenolphthalein indicator, the solution turns red (methic acid).

Warm 10 Gm. of nikethamide for one hour with 3 cc. of dilute hydrochloric acid and 6 cc. of water, cool and add 5 cc. of sodium hydroxide solution; the solution yields no distinct yellow color (foreign organic impurities).

A solution made by dissolving 1 Gm. of nikethamide in 5 cc. of carbon disulfide is clear (water).

Ash 1 Gm. of nikethamide; the residue is negligible. Transfer 25 mg. to 50 mg. of nikethamide, accurately weighed, to a 50 cc. Kjeldahl digestion flask and add 1 cc. of water and 1 cc. of concentrated sulfuric acid. Heat the mixture gently until most of the water has been removed and continue heating vigorously for fifteen minutes, cool, add 3 cc. of water, transfer to a micro Kjeldahl distilling apparatus, add 5 cc. of sodium hydroxide solution (1:1) and distill into a flask containing 10 cc. of 2 per cent boric acid solution colored with methyl red solution (1 drop in each 20 cc.). Titrate the solution with fiftieth normal sulfuric acid to a pink color, matched against a prepared blank. Each cubic centimeter of fiftieth normal sulfuric acid is equivalent to 3.565 mg. of nikethamide. The amount of nikethamide found should be not less than 99 per cent nor more than 100.5 per cent.

The following dosage forms have been accepted:
GEORGE A. BREON & CO., INC., KANSAS CITY, MO.

Solution Nikethamide 25% W/V: 2 cc. and 5 cc. ampuls

THE LAKESIDE LABORATORIES, INC., MILWAUKEE.

Solution of Nikethamide, 25% W/V: 2 cc. and 5 cc. ampuls and 15 cc. vials with dropper for oral use.

Solution of Nikethamide, 25% W/V: 15 cc. vial for injection with 0.5% chlorobutanol.

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Nikethamide: bulk.

Solution Nikethamide 25% W/V: 1½ and 5 cc. ampuls; 15 cc. vials for oral administration

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Solution Nikethamide 25% W/V: 1.5 and 10 cc. ampuls; 3 ounce bottle.

MENADIONE (See THE JOURNAL, Jan. 17, 1942, p. 226)

The following dosage form has been accepted:

MCNEIL LABORATORIES, PHILADELPHIA.

Capsules Menadione: Each soft elastic black capsule contains 2 mg. of menadione dissolved in corn oil.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p. 519).

The following dosage forms have been accepted:

GEORGE A. BREON & CO., INC., KANSAS CITY, MO.

Sulfathiazole-Breon (powder): bulk.

Tablets Sulfathiazole-Breon: 0.5 Gm. (7½ grains).

HOSPITAL SERVICE IN THE UNITED STATES

TWENTY-FIRST ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

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The twenty-first annual census of hospitals by the Council on Medical Education and Hospitals of the American Medical Association for the year 1941 discloses a total of 6,358 registered hospitals. This is an increase of 67 hospitals over the number on the Register one year ago.

The growth of hospital facilities for the past year was the equivalent of one 269 bed hospital for every day, Sundays and holidays included.

The capacity of registered hospitals amounts to 1,324,381 beds and 66,163 bassinets. There are 98,136 more beds and 4,224 more bassinets than one year ago.

These figures refer only to inpatients, or bed patients, and do not include outpatients or ambulatory patients, a similar number of whom visit hospital outpatient departments.

The total patient days of hospital service for 1941 was 396,769,235, an increase over 1940 of 21,190,649. The number of patient days was obtained by multiplying the average daily census of all registered hospitals by 365.

The average occupancy rate in general hospitals was 68.2 per cent compared with 70.3 per cent for the preceding year.

SUMMARY OF HOSPITAL DATA				Patients Admitted in 1941
	Number	Beds	Bassinets	
1. Registered hospitals and sanatoriums approved for internships, residencies and fellowships.....	1,049*	471,301	30,144	5,672,733
2. Other registered hospitals, sanatoriums and related institutions	5,309	853,080	36,019	5,923,455
Total registered.....	6,358	1,324,381	66,163	11,596,188
Of the foregoing, the American College of Surgeons approves.....	2,307	726,531	44,330	8,334,546
				Number
3. Refused registration after investigation (capacity 16,267).....				542
4. Unclassified emergency stations, clinics, offices, cottages, and so on, with facilities for bed care (capacity unknown).....				2,534
5. Prospective hospitals and sanatoriums:				
a. Opened. Registration pending.....				95
b. Under construction.....				55
c. Planned. Construction pending.....				108

* As of Dec. 31, 1941.

For thirty-one years the average net increase in hospital facilities was around 25,000 to 30,000 beds each year, as contrasted with 98,136 beds increase between the census of 1940 and the census of 1941.

The present report covers approximately the calendar year 1941. Because of differences in fiscal years, not all hospitals supplied data for the calendar year 1941. The minority, including mainly the smaller hospitals, reported for the twelve month period ended Sept. 30, 1941.

Reports were received from 6,318 hospitals out of the total of 6,358 registered hospitals, or a record of 99.4 per cent.

The total number of patients that entered registered hospitals during the year was 11,596,188 as compared with 10,087,548 for the previous year, an increase of 14.95 per cent. Patients entered hospitals, therefore, at the rate of one for each 2.7 seconds day and night throughout the year, including Sundays and holidays.

The average census of patients in hospitals was 1,087,039, an increase of 60,868 over the previous year.

Special acknowledgment and appreciation are extended to the many hospital superintendents and assistants, chiefs and members of staffs, and other officials who have cooperated by supplying details that made possible the elaborate and complete statistics and lists published in this issue. Much credit is due to county and state medical organizations and health commissioners for their prompt and efficient help.

The average number of idle beds in general hospitals for 1941, as indicated in the reports, was 169,884. In 1940 it was 137,200.

This drop in occupancy rate is readily explained by the unusually rapid increase in hospital facilities, which temporarily got ahead of the occupancy rate. There has been a rise in occupancy rate in general hospitals since 1933, for example, when it was only 59.9 per cent. In the same time there has been a considerable increase in general beds.

The average stay per patient in general hospitals has been reduced from fourteen days in 1935 to twelve days

in 1941, an average saving of two days per patient. For all the 10,646,947 patients in general hospitals in 1941 the aggregate saving was 58,339 years. Figuring this saving at \$4 a day, the cost of hospitalization for each patient admitted was \$8 less than it would have been in 1935, the equivalent of a saving of \$85,175,576 in hospitalization costs.

One person for each 11 in the United States entered a hospital as a patient in the year 1941, using the 1940 census and counting only bed patients.

ANNUAL CENSUS OF HOSPITALS

In each annual census blank are certain standard questions such as number of beds, bassinets, births, patients admitted, average census of patients, also lists of staff doctors and interns. In addition to these perennial data, each questionnaire includes certain questions that are of importance at the particular time. Each succeeding questionnaire, therefore, is different from the preceding, and the tendency is for them to expand somewhat in length and complexity. The policy of the Council always has been to ask only for data that are important and to make use of all the information that is obtained.

The list of registered hospitals beginning on page 1071 omits additions to hospital facilities that may have been made by certain departments of the federal government since the publication of the last previous issue of the Hospital Number, March 15, 1941. The statistical tables, however, include data on all registered hospital facilities.

The hospitals that are approved by the Council for internships and for residencies in specialties received a questionnaire that is more comprehensive than the one used for all the other registered hospitals.

In the list of registered hospitals following this article the hospitals that the Council approves for intern training are marked with a five point star (*) and those approved for residencies with a plus sign (+). Some detailed information regarding the hospitals approved by the Council are given on a later page under the heading of Internships, Residencies and Fellowships.

It is not necessarily true in all cases that the approved hospitals have essentially better equipment or give better care to patients, but because a hospital assumes the function of training interns and residents and is approved for that purpose it becomes necessary for the Council to check on the teaching facilities and functions in those hospitals in addition to the general information solicited from all other registered hospitals.

COOPERATION BY AMERICAN COLLEGE OF SURGEONS AND A. M. A. ON CENSUS BLANK

This year, for the second time, the questionnaires used by the Council represent a combination of the annual census blank of the American Medical Association and the annual questionnaire of the American College of Surgeons. Cooperation of the College and the Council reduces the work of filling out questionnaires by hospitals. It also facilitates the gathering of essential data required by the two cooperating organizations for their use and for the public. The officials of the A. M. A. and the College, and their office staffs, worked together to design a questionnaire that would elicit more information with fewer questions and achieve greater uniformity and simplification in the use of terms. All the hospitals that are fully approved as meeting the minimum standards of the American College of Surgeons are designated with a delta (Δ) in the list of registered hospitals, page 1071.

The accompanying tabulation shows the increase in hospital facilities bearing the approval of the American College of Surgeons.

Each organization has its own distinctive standards, administration, inspections and approved lists. Approval of a given institution by one organization does not in any way affect the initiative and the responsibility of

Percentage of Beds Occupied

	1929	1940	1941
According to Ownership or Control:			
Federal.....	76.8	70.5	66.3
State.....	94.6	94.4	93.6
County.....	80.7	85.0	84.7
City.....	74.3	80.5	78.2
City county.....	80.2	65.5	73.7
Total governmental.....	88.9	89.8	86.2
Church.....	60.7	70.4	73.1
Fraternal.....	63.7	.....	.....
Nonprofit associations.....	.....	70.8	72.7
Industrial.....	54.4	.....	.....
Independent associations.....	65.9	.....	.....
Total nonprofit.....	.....	70.6	73.2
Individual and partnership.....	54.2	52.0	57.7
Corporations (profit unrestricted).....	.....	63.5	61.5
Total proprietary.....	.....	56.8	60.8
Total nongovernmental.....	64.6	63.5	71.4
According to Type of Service:			
General.....	65.5	70.3	68.2
Nervous and mental.....	93.7	95.1	94.5
Tuberculosis.....	82.7	85.6	85.7
Maternity.....	62.8	62.6	63.3
Industrial.....	54.6	53.9	56.2
Eye, ear, nose and throat.....	47.7	54.4	55.5
Children's.....	65.9	68.2	63.1
Orthopedic.....	80.2	76.5	77.1
Isolation.....	36.1	42.4	32.9
Convalescent and rest.....	70.9	77.7	82.7
Hospital departments of institutions.....	63.0	70.6	76.2
All other hospitals.....	74.6	79.9	85.6
Total all hospitals.....	80.1	83.7	82.1

* Fraternal classification discontinued—transferred to nonprofit associations.

the other organization with regard to the approval of that institution. There is cooperation as to the joint questionnaire, correlation of inspection itineraries and mutual courtesy in the use of symbols to designate each other's approvals.

REGISTRATION AND APPROVAL

Registration means the inclusion of the hospital in the list published in the Hospital Number of THE JOURNAL and in the American Medical Directory. The Essentials of a Registered Hospital are employed in such a way as to raise the standards of hospitals and to point the way to better service.

Approval, on the other hand, means specific endorsement of hospitals for educational purposes, the fitness for which is determined by observation, inspection and

Hospitals Fully Approved by the American College of Surgeons in the United States

	Hospitals	Beds	Bassinets	Patients Admitted
1941.....	2,307	726,531	44,330	8,334,546
1940.....	2,261	652,634	41,697	7,495,253

comparison with definite requirements for the intern training and residencies.

Registration is a basic recognition, extended to all the hospitals and related institutions concerning which the Council has no evidence of irregular or unsafe practices. Approval is designation of certain registered institutions by the Council for internships, residencies and fellowships; or by the American College of Surgeons as unconditionally meeting its minimum standards. Registration of hospitals is governed by the

Essentials of a Registered Hospital, adopted by the House of Delegates in 1928 and revised in 1939.

The term approved, as used by the College of Surgeons, may be applied to those registered hospitals that meet the minimum standards of the College.

Summary of Hospital Service in the United States According to Type of Service and Agencies Concerned from the 1941 Census of Hospitals Registered by the American Medical Association

U. S. Totals	6,358	1,324,381	1,087,039	66,163	1,404,940	11,566,188
Type	Hospitals	Beds	Average Census	Bassinets	Births	Admissions
Federal						
Totals.....	428	179,202	118,890	1,006	11,811	1,263,112
General.....	353	127,994	72,452	1,002	11,782	1,220,208
N&M.....	34	44,155	40,674	.....	.....	19,996
TB.....	20	5,444	4,676	.....	13	11,104
Special.....	2	544	431	4	16	1,000
Inst.....	19	1,065	657	.....	.....	15,891
State						
Totals.....	530	600,320	561,620	1,572	32,113	620,231
General.....	61	22,152	16,705	1,312	31,589	343,886
N&M.....	264	512,134	515,918	178	339	132,984
TB.....	74	25,074	21,975	4	26	28,477
Special.....	16	2,203	1,597	12	62	14,472
Inst.....	115	8,757	5,425	66	97	100,412
County						
Totals.....	512	95,227	83,214	3,288	66,639	643,740
General.....	235	37,510	28,708	2,879	60,540	571,690
N&M.....	54	26,239	25,174	7	24	8,041
TB.....	165	23,826	20,807	2	21	23,918
Special.....	11	1,901	1,159	380	5,803	14,663
Inst.....	27	8,751	7,366	20	301	25,428
City						
Totals.....	387	78,060	61,019	5,045	112,962	899,539
General.....	243	49,462	38,077	4,925	111,081	930,485
N&M.....	4	4,826	4,546	1	5	1,155
TB.....	28	12,239	10,726	92	1,855	18,334
Special.....	50	6,560	3,076	17	21	33,101
Inst.....	12	4,973	4,394	10	.....	10,484
City-County						
Totals.....	57	9,702	7,149	533	15,497	130,960
General.....	35	6,284	4,186	533	15,497	125,148
N&M.....	.....	.....	.....	.....	.....	.....
TB.....	14	2,066	1,808	.....	.....	2,149
Special.....	6	532	305	.....	.....	2,524
Inst.....	2	790	790	.....	.....	1,139
Church						
Totals.....	993	123,331	90,195	20,145	463,111	2,961,594
General.....	800	110,400	79,875	18,676	441,133	2,894,935
N&M.....	17	3,511	3,240	.....	.....	12,046
TB.....	21	2,678	2,216	.....	.....	9,539
Special.....	86	6,632	4,786	1,454	21,978	283,026
Inst.....	3	90	73	15	.....	20,441
Nonprofit						
Totals.....	1,917	182,140	132,472	26,422	561,844	3,931,141
General.....	1,484	142,390	102,118	24,713	536,771	3,905,789
N&M.....	36	7,136	6,482	.....	.....	12,046
TB.....	80	8,272	6,320	1	1	9,539
Special.....	271	21,756	15,863	1,701	25,072	283,026
Inst.....	"	"	1,680	7	.....	20,441
Corporations						
Totals.....	435	24,639	15,898	3,048	61,159	494,967
General.....	303	16,253	10,192	2,943	59,524	451,412
N&M.....	84	5,499	3,757	31	435	19,276
TB.....	18	1,401	1,151	.....	1	1,866
Special.....	30	1,450	793	74	1,199	22,413
Inst.....	..	.....	.....	.....	.....	.....

GOVERNMENT HOSPITALIZATION

Federal hospitals admitted 1,268,112 patients, including those of the Veterans Administration, Army, Navy, Public Health Service, the Departments of Justice and of Indian Affairs, the Tennessee Valley Authority and the National Youth Administration. The average census of patients in federal hospitals was 118,890.

FACILITIES UNDER STATE AND LOCAL GOVERNMENT

State hospitals number 530 and show an increase of 9 during the year. The capacity is 600,320 beds as compared with 572,079 beds a year ago. Bassinets now number 1,572. State hospitals admitted 620,231 patients and the average daily census was 561,620, an increase of 36,957 admissions and of 21,626 in the average daily census over the previous year.

There are now 512 county hospitals where there were 514 a year ago. The capacity of county hospitals decreased to 98,227 beds. Bassinets have slightly increased to 3,288. Patients admitted to county hospitals were 643,740 as compared with 615,247 for the preceding year. The average census of patients was 83,214, reduced from 87,029.

City hospitals, numbering 337, reached an increase of 5 over the previous year, and the bed capacity increased to 78,060 and bassinets to 5,045. The number of patients admitted was slightly increased to 999,559, and the average census reduced from 63,644 to 61,019.

City-county hospitals are fewer in number, capacity and average census but increased during the year in number of patients admitted from 126,487 to 130,960.

HOSPITAL FACILITIES UNDER NONPROFIT ORGANIZATIONS

For convenience, the hospital work of nonprofit organizations is shown under "Church Related Institutions" and "Other Nonprofit Associations."

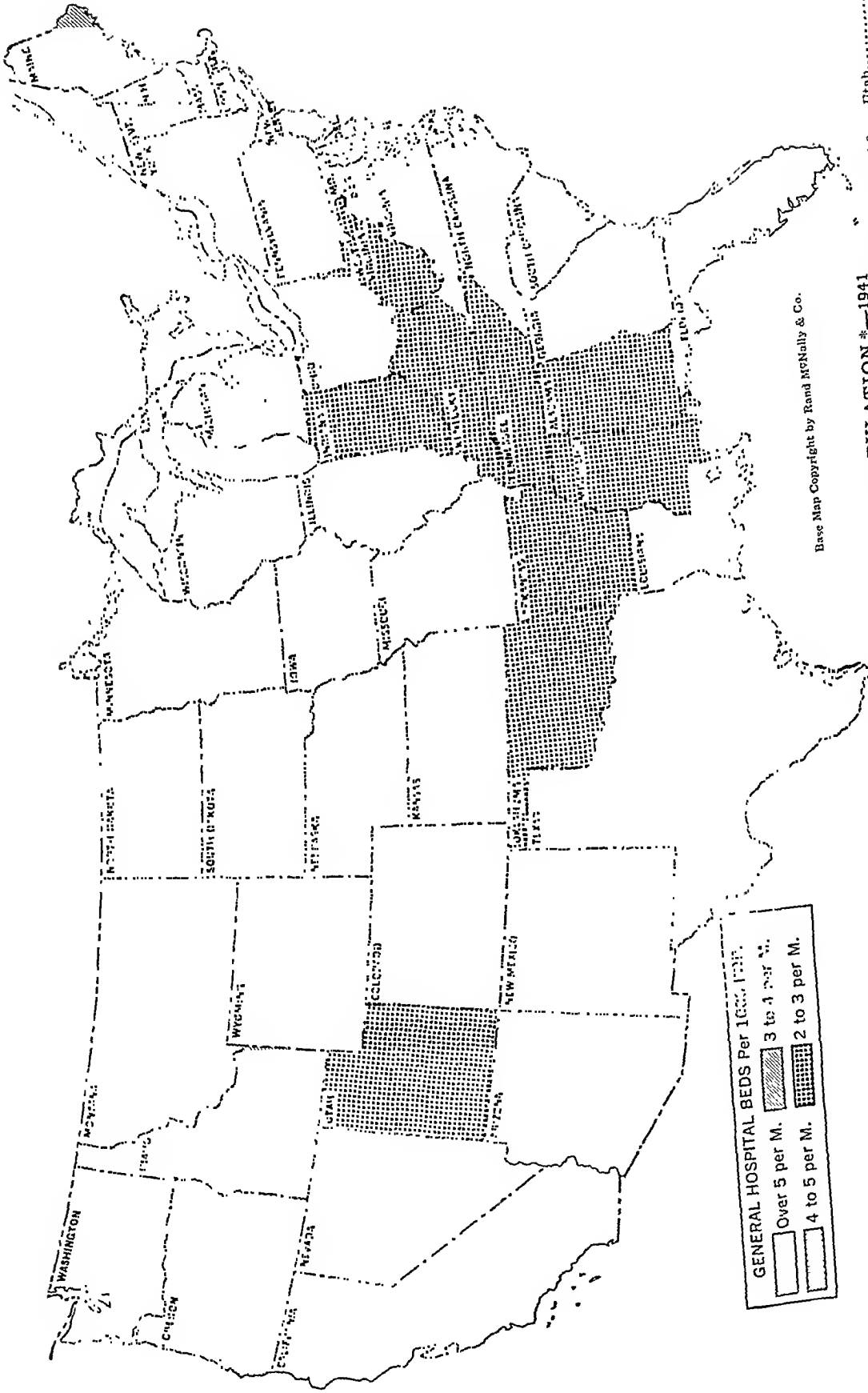
Church related hospitals number 993, which is 5 fewer than a year ago, but the group shows very substantial

Supply and Utilization of Beds in General Hospitals; States Ranked According to General Hospital Beds per 1,000 Population (See Text Page 1061)

	General Hospitals Beds per 1,000 Population	Per Cent of Occupancy in General Hospitals, 1941	Per Cent of Population Entering General Hospitals	Population of States U. S. Census, 1940
1. Utah.....	2.1	55.3	3.5	530,310
2. Kentucky.....	2.2	68.2	5.1	2,845,627
3. Alabama.....	2.4	53.0	5.0	2,832,961
4. Mississippi.....	2.6	47.5	5.2	2,183,796
5. Tennessee.....	2.6	69.8	5.9	2,015,841
6. Arkansas.....	2.8	56.5	4.3	1,049,387
7. Oklahoma.....	2.8	61.2	6.0	2,336,434
8. Indiana.....	2.8	70.4	6.6	3,427,796
9. West Virginia.....	2.0	66.5	7.2	1,901,074
10. Iowa.....	3.0	66.1	7.2	2,538,263
11. Ohio.....	3.0	76.0	7.3	6,907,612
12. North Carolina.....	3.2	62.1	7.2	3,571,623
13. Idaho.....	3.5	61.7	7.6	524,873
14. Nebraska.....	3.6	61.5	6.7	1,315,834
15. Pennsylvania.....	3.6	72.9	7.3	9,900,180
16. Maine.....	3.7	72.8	7.6	847,226
17. Illinois.....	3.8	74.2	9.1	7,897,241
18. Kansas.....	3.9	62.9	7.3	1,801,028
19. North Dakota.....	3.9	66.4	9.3	611,035
20. Wisconsin.....	3.0	69.5	8.7	3,137,587
21. Georgia.....	4.0	52.5	7.0	3,123,723
22. Missouri.....	4.0	61.2	6.9	3,784,661
23. New Jersey.....	4.0	68.5	7.8	4,169,165
24. Oregon.....	4.0	73.0	9.0	1,089,684
25. South Dakota.....	4.0	60.9	8.1	642,961
26. Texas.....	4.0	54.4	8.0	6,414,824
27. Michigan.....	4.1	78.6	8.7	5,256,106
28. Connecticut.....	4.1	73.8	9.7	1,709,242
29. Minnesota.....	4.2	68.1	9.7	2,792,300
30. New Mexico.....	4.3	58.4	6.7	531,818
31. South Carolina.....	4.5	57.1	7.8	1,899,804
32. Rhode Island.....	4.6	75.1	6.1	713,316
33. New York.....	4.6	76.0	9.1	13,479,142
34. Vermont.....	4.7	65.7	9.9	359,231
35. New Hampshire.....	4.8	69.1	10.1	491,524
36. Virginia.....	4.8	63.4	8.8	2,677,773
37. Maryland.....	5.0	68.6	8.4	1,821,244
38. Delaware.....	5.0	54.9	9.2	266,505
39. Montana.....	5.0	65.9	9.7	599,456
40. Florida.....	5.1	52.5	8.5	1,897,414
41. Louisiana.....	5.7	64.6	10.7	2,563,880
42. Colorado.....	5.7	63.3	9.6	1,123,296
43. Washington.....	5.8	66.9	11.8	1,736,191
44. Massachusetts.....	5.9	68.2	9.8	4,316,721
45. California.....	5.9	72.3	10.3	6,907,387
46. Wyoming.....	6.0	53.5	11.5	250,742
47. Arizona.....	7.4	61.1	11.4	419,261
48. Nevada.....	8.0	63.4	12.3	110,217
49. Dist. of Columbia..	10.6	78.0	15.4	663,091
Total.....	4.1	68.2	8.1	131,669,275

increases in its facilities, which now number 123,331 beds and 20,145 bassinets. There were 2,961,594 patients admitted, and the average census was 90,195.

The other nonprofit organizations have increased in number from 1,903 to 1,917. They have 182,140 beds



Base Map Copyright by Rand McNally & Co.

Unh.	2.1
Utah	4.7
Virginia	4.9
Washington	5.8
West Virginia	3.0
Wisconsin	3.9
Wyoming	6.0

Oregon	4.0
Penn.	3.6
Penn. Island	4.6
South Carolina	4.0
South Dakota	4.0
Tennessee	3.0
Texas	4.6

New Jersey	4.0
New Mexico	4.3
New York	4.6
North Carolina	3.2
North Dakota	3.0
Ohio	2.8
Oklahoma	2.8

Minnesota	4.2
Mississippi	2.6
Missouri	1.6
Montana	5.6
Nebraska	5.6
Nevada	8.9
New Hampshire	4.8

Kansas	3.9
Kentucky	2.2
Louisiana	5.7
Maine	3.7
Maryland	5.0
Massachusetts	4.1
Michigan	4.1

District of Columbia	10.6
Alabama	2.1
Arizona	7.1
Arkansas	2.3
California	5.7
Colorado	4.1
Connecticut	5.0
Delaware	5.0

GENERAL HOSPITAL BEDS PER THOUSAND POPULATION *—1941	
Alabama	2.1
Arizona	7.1
Arkansas	2.3
California	5.7
Colorado	4.1
Connecticut	5.0
Delaware	5.0
District of Columbia	10.6
Florida	4.6
Georgia	4.6
Idaho	3.3
Illinois	5.7
Indiana	2.8
Iowa	3.0
Kansas	3.9
Kentucky	2.2
Louisiana	5.7
Maine	3.7
Maryland	5.0
Massachusetts	4.1
Michigan	4.1
Minnesota	4.2
Mississippi	2.6
Missouri	1.6
Montana	5.6
Nebraska	5.6
Nevada	8.9
New Hampshire	4.8
New Jersey	4.0
New Mexico	4.3
New York	4.6
North Carolina	3.2
North Dakota	3.0
Ohio	2.8
Oklahoma	2.8
Oregon	4.0
Penn.	3.6
Penn. Island	4.6
South Carolina	4.0
South Dakota	4.0
Tennessee	3.0
Texas	4.6
Unh.	2.1
Utah	4.7
Virginia	4.9
Washington	5.8
West Virginia	3.0
Wisconsin	3.9
Wyoming	6.0

* Sixteenth Census of the United States: 1910.

and 26,422 bassinets. The number of patients admitted increased to 3,931,141, and the average census to 132,472.

The service accomplished by all nonprofit associations, including church related, is best understood by examining section B of table 1, where it is found that

Summary of Growth of Hospitals, 1909 to 1941

Year	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
	Num-ber	Capac-ity	Num-ber	Capac-ity	Num-ber	Capac-ity	Num-ber	Capac-ity
1909	71	8,827	232	189,049	4,056	223,189	4,359	421,065
1914	93	12,602	294	232,534	4,650	287,045	5,037	532,481
1918	110	18,815	303	262,251	4,910	331,182	5,323	612,251
1923	220	53,569	601	302,208	6,009	399,645	6,830	755,722
1928	294	61,765	595	369,759	5,963	461,410	6,852	892,934
1931	291	69,170	576	419,282	5,746	485,663	6,613	974,115
1932	301	74,151	568	442,691	5,693	497,602	6,562	1,014,354
1933	295	75,635	557	459,646	5,585	491,765	6,437	1,027,046
1934	313	77,865	544	473,035	5,477	497,201	6,334	1,048,102
1935	316	83,353	526	483,994	5,404	507,782	6,246	1,075,139
1936	323	84,234	524	503,306	5,342	509,181	6,189	1,096,721
1937	329	97,951	522	508,913	5,277	517,634	6,128	1,124,548
1938	330	92,248	523	541,279	5,313	527,853	6,166	1,161,350
1939	329	96,338	523	560,575	5,374	538,113	6,226	1,195,026
1940	336	103,828	521	572,079	5,434	545,238	6,291	1,226,245
1941	428	179,202	530	600,320	5,400	544,859	6,353	1,324,381

the total number of nonprofit institutions now is 2,910 with a capacity of 305,471 beds and 46,567 bassinets. Admissions to nonprofit institutions amounted to 6,892,735, the admissions for the previous year being 6,254,850. The average census was 222,667 as compared with the previous year, when it was 210,764.

FACILITIES UNDER PROPRIETARY CONTROL

The total of facilities now under proprietary control is 1,584 hospitals having a capacity of 53,399 beds and 8,102 bassinets. Patients admitted numbered 1,040,851 with an average census of 32,480.

Proprietary hospitals fall into two groups, those maintained by individuals and partnerships and those that are owned by corporations which have the privilege of making a profit or which, in other words, are unrestricted as to profit.

Individual and partnership hospitals, it will be noticed, have declined in number since the year 1927. They now number 1,149 with a capacity of 28,760 beds and 5,054 bassinets. Admissions increased last year to 545,884 and average census to 16,582.

The corporations unrestricted as to profit have 435 hospitals as compared with 449 a year ago. The number of beds has decreased in the past year to 24,639. There are 3,048 bassinets. The patients admitted increased to 494,967 and the average census rose to 15,898.

FIGURES ON ALL NONGOVERNMENTAL FACILITIES

The final, or total, column of table 1, headed "Total Nongovernmental," shows a tendency toward increase in the average size of those hospitals rather than in number. Total nongovernmental hospitals is now 4,494 as compared with 4,524 one year ago. Present capacity is at a peak of 358,870 beds and 54,669 bassinets. Patients admitted in all nongovernmental hospitals numbered 7,933,586 as compared with 7,218,544 in 1940. The average census was 255,147 as compared with 241,499 a year ago.

WHERE CHANGES IN CAPACITY OCCURRED DURING 1941

For thirty-one years the average annual increase in the capacity of hospitals had been in the neighborhood of 25,000 to 30,000 beds. The census for 1941, how-

ever, showed a remarkable increase, which is astonishing even for this unusual period.

During 1941 there was a net increase of 98,136 beds in all hospitals. State hospitals gained 28,241 beds, church related institutions 2,522 beds and other nonprofit hospitals 4,459 beds. There were losses in bed capacity in county hospitals of 4,113 beds, city hospitals 985, city-county hospitals 1,595 beds, individual and partnership hospitals 198, corporation hospitals (unrestricted as to profit) 469. This makes a net increase of 98,136 for the year, or the equivalent of one 269 bed hospital for each day of the year, Sundays and holidays included.

REDUCED AVERAGE STAY PER PATIENT IN GENERAL HOSPITALS, COMPARING 1935 AND 1941

The average length of time spent in general hospitals per patient in 1941 was twelve days. In 1935 it was fourteen days. The very important thing is that there has been a saving of two days, and this saving when applied to all of the 10,646,947 patients who used general hospitals in 1941 means an aggregate saving of 58,339 years. The record achieved by each type or group of hospitals, according to ownership or control, is shown in the table entitled "Average Length of Stay per Patient in General Hospitals, 1935 and 1941." In that period the length of stay in governmental general hospitals dropped from twenty-two to eighteen and in non-governmental general hospitals from eleven to ten days.

Further analysis shows that the general hospitals operated under federal auspices accomplished a reduction from thirty-six days to twenty-one days, state from twenty-one to eighteen days, county from twenty to eighteen days, city from sixteen to fifteen and city-county from seventeen to twelve days.

Continuing the comparison of 1935 and 1941, in church related hospitals the average stay dropped from twelve days to ten days and in all nonprofit associations from eleven days to ten days. Only the hospitals operated and owned by individuals and partnerships remained stationary at eight days; corporations for profit dropped from nine to eight days.

Average Length of Stay per Patient in General Hospitals, 1935 and 1941

	1935	1941
According to Ownership or Control		
Federal...	36 days	21 days
State...	21 days	18 days
County...	20 days	16 days
City....	16 days	15 days
City-county	17 days	12 days
All governmental general...	21 days	18 days
Church related...	12 days	10 days
Other nonprofit association	11 days	10 days
All nonprofit general...	11 days	10 days
Individual and partnership...	8 days	8 days
Corporations (profit unrestricted)...	9 days	8 days
All proprietary general...	9 days	8 days
All nongovernmental general...	11 days	10 days
All general hospitals...	14 days	12 days

PERCENTAGE OF BEDS OCCUPIED

The occupancy rate of all registered hospitals was 82.1 per cent for the year 1941 as compared with 83.7 for 1940 and 80.1 for 1929.

Although there was a large increase in number of patients admitted to hospitals during the year, it does not necessarily follow that the rate of occupancy would be higher. Indeed, it appears that because of the rapid

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL. A. GOVERNMENT HOSPITALS

Marginal No	Federal				State				County				City				City County				Total Governmental				
	Hospitals	Beds	Patients Admitted	Average Census	Hospitals	Beds	Patients Admitted	Average Census	Hospitals	Beds	Patients Admitted	Average Census	Hospitals	Beds	Patients Admitted	Average Census	Hospitals	Beds	Patients Admitted	Average Census	Hospitals	Beds	Patients Admitted	Average Census	
1 Alabama	7	3,793	24,349	2,542	7	6,973	7,443	6,797	8	1,341	80	16,956	685	2	108	13	3,562	62	148	27	12,467	100	59,292	10,254	
2 Arizona	21	2,127	17,371	1,800	21	1,110	640	1,016	2	465	45	6,280	372	2	81	14	1,943	42	—	29	3,692	15	24,000	2,778	
3 Arkansas	20	14,113	27,106	2,620	14	30,526	31	6,911	5,938	1	263	1	1,079	2	66	20	1,722	29	—	20	10,233	45	37,063	8,809	
4 California	29	14,873	27,106	10,392	30	13,766	677	176,839	15,336	36	13,766	677	176,839	15,336	2	66	20	1,722	29	104	66,628	807	338,658	55,982	
5 Colorado	2	2,371	14,521	2,654	3	4,477	20	8,735	4,948	4	267	40	6,297	222	—	—	—	—	—	3	9,049	115	38,493	7,957	
6 Connecticut	4	403	3,104	232	13	12,683	10	7,361	10,207	4	267	40	6,297	222	—	—	—	—	—	23	13,988	46	15,658	11,933	
7 Delaware	1	118	1,772	34	5	2,061	8	1,598	1,859	—	—	—	—	—	—	—	—	—	—	2	9,179	8	3,370	1,093	
8 Dist. of Columbia	1	10,402	20,579	9,920	6	6,200	7	4,880	11	1,145	78	16,163	526	—	—	—	—	—	—	13	13,470	134	49,278	12,002	
9 Florida	11	4,751	39,174	1,043	7	4,901	4	6,566	7	329	11	7,515	167	10	1,983	147	36,113	707	30	13,077	240	68,820	9,476		
10 Georgia	15	8,330	35,614	4,201	20	4,701	20	1,574	7	329	50	5,145	125	9	1,672	180	40,870	1,214	210	19,747	313	124,507	14,388		
11 Idaho	4	454	2,562	276	20	4,701	74	40,672	20	6,446	260	91,334	5,636	30	3,134	164	94,735	2,269	53	13,277	77	201,378	25,670		
12 Illinois	11	8,271	11	52	60	18	13,030	38	7	13,977	63	14,984	620	4	765	72	8,492	172	—	64	21,436	307	81,167	19,043	
13 Indiana	5	3,070	4	13	47	11	11,916	54	10,966	37	7,763	54	9,461	462	8	237	72	8,492	172	39	11,739	187	90,755	11,031	
14 Iowa	1	1,000	7	5,017	1,673	11	8,223	25	7,861	1	332	30	7,053	131	5	717	87	15,577	470	1	11,358	134	43,740	9,537	
15 Kansas	2	2,061	11	38,931	1,291	11	8,223	25	7,861	1	332	30	7,053	131	5	717	87	15,577	470	27	12,377	153	66,960	11,008	
16 Kentucky	8	1,676	22	29,180	2,840	7	12,664	329	3	1,371	3	1,371	3	1,371	2	136	6	1,020	87	3	12,377	153	66,960	11,008	
17 Louisiana	10	6,121	8	61,017	7,797	11	12,664	329	3	1,371	3	1,371	3	1,371	2	136	6	1,020	87	3	12,377	153	66,960	11,008	
18 Maine	3	118	4	189	363	6	4	6	4	228	3	106	21	57	3	144	32	2,839	154	1	13,778	30	9,191	4,775	
19 Maryland	12	7,255	24,784	2,440	11	9,993	60	9,662	3	106	21	57	3	144	32	2,839	154	1	13,778	30	13,393	309	55,271	13,115	
20 Massachusetts	12	7,255	24,784	2,440	11	9,993	60	9,662	3	106	21	57	3	144	32	2,839	154	1	13,778	30	13,393	309	55,271	13,115	
21 Michigan	9	1,107	4	21,210	2,164	19	22,051	60	20,262	28	11,437	80	33,807	10,453	38	4,915	496	82,710	3,629	7	49,862	531	149,482	19,595	
22 Minnesota	9	2,034	33	13,710	1,845	19	16,125	46	15,000	26	11,437	80	33,807	10,453	38	4,915	496	82,710	3,629	7	49,862	531	149,482	19,595	
23 Mississippi	6	1,106	7	22,017	1,642	12	3,895	39	11	5,267	4	118	14	2,031	7	2	66	6	546	12	9,235	315	66,746	12,003	
24 Missouri	7	6,112	0	23,252	2,427	12	12,678	8	11	5,267	4	118	14	2,031	7	2	66	6	546	12	9,235	315	66,746	12,003	
25 Montana	8	418	39	5,878	933	2	2,205	12	6,851	6	319	31	1,890	336	17	9,592	234	60,200	7,816	30	2,436	425	90,440	21,217	
26 Nebraska	7	701	0	4,641	912	9	6,124	312	6,021	6	319	31	1,890	336	17	9,592	234	60,200	7,816	17	27,771	425	90,440	21,217	
27 Nevada	7	21	2	2,981	176	1	350	1	98	3	106	21	57	3	144	32	2,839	154	1	17	2,667	93	17,911	4,684	
28 New Hampshire	2	240	2	2,110	105	1	318	5	3	3019	7	301	66	4,227	240	2	136	15	2,045	64	15	1,065	78	8,432	770
29 New Jersey	6	4,761	5	25,760	2,627	16	17,179	10	10,628	35	5,985	95	22,692	4,784	2	63	14	2,515	41	22	33,604	820	87,000	36,737	
30 New Mexico	11	1,410	60	11,127	960	3	1,289	10	1,158	36	5,985	95	22,692	4,784	2	63	14	2,515	41	101	142,863	1,380	72,837	13,324	
31 New York	26	11,711	47	69,907	9,411	47	101,325	95	10,628	36	5,985	95	22,692	4,784	2	63	14	2,515	41	12	30,310	102	78,387	19,076	
32 North Carolina	13	4,566	22	45,260	2,697	9	10,086	6	9,377	19	4,041	297	58,715	3,102	5	202	34	5,140	86	37	13,666	180	63,981	11,998	
33 North Dakota	6	340	3	4,091	236	23	29,018	37	28,634	26	3,359	83	16,877	3,091	19	4,041	297	58,715	3,102	12	3,787	42	6,110	3,433	
34 Ohio	8	3,476	3	16,409	3,078	23	29,018	37	28,634	26	3,359	83	16,877	3,091	19	4,041	297	58,715	3,102	37	40,074	416	115,893	37,275	
35 Oklahoma	15	2,800	98	30,384	1,536	14	10,351	27	10,624	2	95	20	2,285	58	5	202	34	5,140	86	19	7,569	66	19,432	7,247	
36 Oregon	7	1,509	14	3,394	1,216	0	6,270	30	5,973	2	95	20	2,285	58	5	202	34	5,140	86	72	30,302	286	110,745	51,718	
37 Pennsylvania	8	1,099	2	29,991	3,491	40	44,337	162	40,412	16	5,299	3	3,294	4,548	7	5,112	69	33,763	3,216	25	12,532	170	82,867	9,469	
38 Rhode Island	1	678	7	5,700	383	4	5,480	20	4,630	10	1,140	97	22,709	802	3	433	45	13,109	350	18	6,943	28	8,072	5,384	
39 South Carolina	10	4,367	27	4,827	2,734	3	6,078	1	5,885	12	1,686	105	22,827	1,467	3	65	21	1,745	83	25	3,776	67	11,023	2,955	
40 South Dakota	8	827	43	8,116	614	4	2,865	2,404	6,725	7	2,208	37	3,873	1,890	3	65	21	1,745	83	98	37,462	216	77,576	12,043	
41 Tennessee	7	2,011	4	21,622	2,127	7	6,190	26	18,587	20	1,148	134	21,800	680	8	441	137	33,813	245	20	37,424	461	222,669	28,385	
42 Texas	33	11,894	65	121,480	7,369	16	18,912	26	18,587	20	1,148	134	21,800	680	8	441	137	33,813	245	13	2,029	148	41,262	1,504	
43 Utah	3	348	3	3,538	228	3	1,787	1	1,705	4	308	47	5,624	177	3	01	37	1,817	48	—	—	—	—	—	—
44 Vermont	2	178	2	3,684	227	6	1,622	1	1,597	2	80	13	1,889	78	6	1,100	53	5,535	875	7	2,000	9	4,957	1,784	
45 Virginia	7	7,512	37	38,763	4,735	14	11,000	142	12,972	12	1,686	105	22,827	1,467	3	65	21	1,745	83	35	22,421	285	106,408	18,600	
46 Washington	16	5,107	34	46,182	3,061	11	9,712	13	8,229	12	1,686	105	22,827	1,467	3	65	21	1,745	83	79	16,178	179	74,995	13,596	
47 West Virginia	1	317	11	7,154	1,711	10	5,418	17	5,267	4	201	19	2,521	142	2	270	18	3,470	140	18	6,123	50	16,015	5,800	
48 Wisconsin	6	1,613	11	7,154	1,711	10	5,418	17	5,267	4	201	19	2,521	142	2	270	18	3,470	140	88	22,514	250	66,206	20,746	
49 Wyoming	4	1,195	12	9,671	1,564	4	1,205	14	1,110	4	411	70	9,629	232	—	—	—	—	—	12	2,811	96	21,669	2,606	
TOTALS	1,270	202,111	2,063,112	118,890	570	60,720	211	761,690	512	95,227	3,988	643,740	83,214	512	95,227	3,988	643,740	83,214	512	95,227	3,988	643,740	83,214		
1 Alabama	7	3,793	24,349	2,542	7	6,973	7,443	6,797	8	1,341	80	16,956	685	2	108	13	3,562	62	148	27	12,467	100	59,292	10,254	
2 Arizona	21	2,127	17,371	1,800	21	1,110	640	1,016	2	465	45	6,280	372	2	81	14	1,943	42	—	29	3,692	15	24,000	2,778	
3 Arkansas	20	14,113	27,106	2,620	14	30,526	31	6,911	5,938	1	263	1	1,079	2	66	20	1,722	29	—	20	10,233	45	37,063	8,809	
4 California	29	14,873	27,106	10,392	30	13,766	677	176,839	15,336	36	13,766	677	176,839	15,336	2	66	20	1,722	29	104	66,628	807	338,658	55,982	
5 Colorado	2	2,371	14,521	2,654	3	4,477	20	8,735	4,948																

turnover of patients—that is, the shorter stay per patient—the rate of occupancy is not much greater than in previous years. In general hospitals, for example, the rate of occupancy was 68.2 per cent as compared with 70.3 one year ago and 65.5 in 1929.

The fact of a reduced rate of occupancy in general hospitals during the past year must be taken in connection with the large addition of new general hospital

patients to the minute throughout the year night and day, Sundays and holidays included.

OCCUPANCY IN GENERAL HOSPITALS

The map entitled "Occupancy in General Hospitals" shows graphically the prevailing rate of occupancy by states. Underneath the map is given each state's occupancy rate. The map is of value to those who wish

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL.
B. NONPROFIT ORGANIZATIONS

Marginal No.		Church Related					Nonprofit Associations					Total Nonprofit					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	9	950	158	33,124	661	21	1,540	149	36,035	980	30	2,490	307	69,159	1,650	1
2	Arizona	7	1,008	112	18,068	586	14	562	61	9,317	328	30	1,570	173	27,385	914	2
3	Arkansas	11	1,138	140	28,702	732	13	819	83	15,318	400	24	1,957	232	44,110	1,132	3
4	California	47	6,665	1,031	159,783	4,505	79	7,189	992	166,073	5,235	126	12,854	2,023	325,856	9,740	4
5	Colorado	27	2,633	403	55,757	1,769	25	2,151	303	17,053	1,394	52	4,784	406	72,840	3,183	5
6	Connecticut	0	1,441	273	42,748	1,165	39	5,474	894	118,287	4,293	45	6,915	1,107	160,635	5,458	6
7	Delaware	1	105	35	1,063	67	8	1,098	181	10,641	612	0	1,203	216	21,604	709	7
8	Dist. of Columbia	4	821	163	27,526	665	10	1,703	337	41,566	1,450	14	2,524	505	69,092	2,115	8
9	Florida	8	1,008	142	24,545	670	31	1,716	239	30,598	967	39	2,724	331	55,143	1,627	9
10	Georgia	8	685	65	18,732	509	22	1,650	219	47,616	1,253	30	2,335	314	60,398	1,812	10
11	Idaho	11	851	183	20,775	566	5	110	34	2,335	61	16	961	217	23,110	627	11
12	Illinois	86	12,371	2,130	307,082	9,094	97	9,666	1,638	242,314	7,029	183	22,037	3,768	549,396	16,123	12
13	Indiana	26	4,161	728	109,467	2,912	20	1,369	263	37,067	994	46	5,530	980	146,534	3,906	13
14	Iowa	41	4,051	642	94,017	2,761	25	1,215	261	29,812	769	60	5,260	903	123,829	8,570	14
15	Kansas	38	3,093	518	74,279	2,193	24	850	150	17,632	448	62	3,943	668	91,861	2,641	15
16	Kentucky	12	1,805	259	48,916	1,378	30	1,785	191	35,514	1,030	42	3,590	450	84,430	2,428	16
17	Louisiana	10	1,628	208	51,312	1,273	16	1,811	131	31,011	610	26	2,939	389	82,323	2,192	17
18	Maine	6	422	73	11,825	312	28	1,755	206	30,286	1,345	34	2,177	368	51,111	1,657	18
19	Maryland	9	2,074	235	36,817	1,733	30	4,287	447	72,308	3,353	39	5,301	652	109,125	5,046	19
20	Massachusetts	16	2,724	442	55,414	2,161	116	11,566	1,969	241,486	8,576	132	14,290	2,411	296,900	10,737	20
21	Michigan	33	4,000	1,006	130,893	3,654	87	7,856	1,162	180,202	5,231	120	12,450	2,163	311,085	8,877	21
22	Minnesota	38	4,146	668	105,567	2,782	63	3,370	669	82,629	2,311	101	7,510	1,387	188,196	6,093	22
23	Mississippi	2	288	38	9,168	174	37	1,432	215	39,208	746	39	1,670	253	48,368	970	23
24	Missouri	41	5,898	780	134,630	4,597	32	2,683	312	50,150	1,854	73	8,581	1,101	164,780	6,461	24
25	Montana	24	1,891	340	41,377	1,262	9	336	57	7,216	203	33	2,227	406	48,603	1,465	25
26	Nebraska	27	2,492	430	53,097	1,451	6	222	44	5,508	137	33	2,114	474	48,606	1,588	26
27	Nevada	1	75	15	1,970	58	2	60	10	674	20	3	135	25	2,614	87	27
28	New Hampshire	4	401	68	10,144	318	26	1,452	306	32,746	605	30	1,853	874	42,890	1,283	28
29	New Jersey	17	3,429	503	71,304	2,583	77	9,606	1,681	201,726	7,222	94	13,025	2,084	272,830	9,605	29
30	New Mexico	13	824	110	14,740	487	11	450	42	6,274	221	24	1,274	101	20,020	708	30
31	New York	70	11,942	1,766	202,459	6,174	223	33,217	4,317	659,098	25,093	302	45,159	6,103	862,157	31,267	31
32	North Carolina	14	1,137	185	22,334	678	80	5,224	663	139,000	3,440	94	6,961	851	168,964	4,318	32
33	North Dakota	21	1,841	327	45,338	1,218	7	282	79	7,717	187	31	2,123	406	63,055	1,406	33
34	Ohio	43	7,128	1,163	191,726	5,613	101	9,078	1,403	235,700	6,780	144	16,206	2,589	427,490	12,393	34
35	Oklahoma	8	920	164	25,027	639	15	723	115	17,841	347	28	2,632	279	42,805	1,066	35
36	Oregon	17	1,978	329	58,060	1,510	11	535	87	9,809	332	28	2,513	416	67,929	1,862	36
37	Pennsylvania	57	5,693	865	98,593	4,062	206	28,245	3,869	647,289	21,657	237	33,854	4,734	645,882	23,710	37
38	Rhode Island	3	445	60	6,767	352	13	1,745	350	34,737	1,307	16	2,190	410	41,504	1,719	38
39	South Carolina	5	421	65	12,053	299	27	1,828	207	45,408	1,205	32	2,244	272	60,571	1,504	39
40	South Dakota	15	1,193	191	27,539	792	12	463	95	11,662	300	27	1,656	286	39,201	1,093	40
41	Tennessee	8	1,325	193	43,294	1,012	27	2,062	246	40,073	1,441	35	3,387	439	83,327	2,453	41
42	Texas	47	4,557	720	138,221	2,936	49	2,438	253	65,263	1,354	96	6,995	973	193,454	4,290	42
43	Utah	6	995	198	24,813	724	9	316	88	6,232	163	15	1,311	286	31,045	857	43
44	Vermont	3	230	34	4,703	176	19	1,880	190	27,527	1,531	22	2,110	234	32,230	1,707	44
45	Virginia	3	343	47	9,006	202	43	3,130	488	89,411	2,265	46	3,473	485	98,419	2,467	45
46	Washington	22	2,565	483	68,765	1,765	25	1,069	407	51,639	1,513	47	4,551	890	120,424	3,278	46
47	West Virginia	9	999	134	23,981	636	17	1,597	199	39,480	1,179	26	2,596	333	62,561	1,815	47
48	Wisconsin	65	7,020	1,199	158,612	5,010	32	2,021	371	51,587	1,372	97	9,041	1,570	210,199	6,882	48
49	Wyoming	2	46	10	893	18	4	102	21	2,496	50	6	148	31	3,389	68	49
50	Totals (1941)	993	123,331	20,145	2,961,594	90,195	1,917	182,140	26,422	3,931,141	182,472	2,910	306,471	46,567	6,892,735	232,667	50
51	(1940)	998	120,809	18,561	2,679,876	85,807	1,903	177,081	24,978	3,574,974	129,757	2,901	298,490	43,539	6,254,800	210,764	51
52	(1939)	1,001	120,740	18,044	2,652,762	81,984	1,839	172,765	23,371	3,503,488	119,342	2,840	293,505	41,415	6,180,200	201,876	52
53	(1938)	951	119,521	17,320	2,531,796	80,576	1,776	169,980	22,523	3,316,310	117,568	2,757	289,501	39,843	5,548,109	198,134	53
54	(1937)	975	115,283	16,851	2,495,114	79,113	1,718	162,474	21,511	3,201,042	114,508	2,693	277,757	38,362	5,096,150	198,671	54
55	(1936)	909	113,268	16,360	2,286,064	74,037	1,742	162,686	21,238	2,972,708	107,510	2,711	275,874	37,598	5,258,772	181,547	55
56	(1935)	970	113,268	16,033	1,900,308	69,592	1,670	155,300	20,119	2,527,207	98,088	2,610	268,508	36,152	4,477,515	167,650	56
57	(1934)	970	113,263	16,067	1,786,322	63,551	1,676	154,449	20,184	2,377,213	93,216	2,646	267,712	36,251	4,103,735	157,967	57
58	(1933)	984	115,810	16,190	1,753,563	63,621											
59	(1932)	1,001	117,555	16,125	1,918,214	70,119											
60	(1931)	1,011	116,935	15,861	2,018,353	73,911											
61	(1930)	1,017	116,846	15,615		75,162											
62	(1929)	1,024	113,555	15,037		75,770											
63	(1928)	1,056	114,613	13,190													
64	(1927)	1,060	108,882			73,813											

facilities during the year. The church related hospitals were operated at an average occupancy of 73.1 per cent, as compared with 70.4 one year ago and 66.7 per cent in 1929. Corporations unrestricted as to profit were 64.5 per cent occupied as compared with 62.5 a year ago. Hospital administrators in general agree that the maximum optional percentage occupancy consistent with efficient service is not much in excess of 75.

The admission of patients to all hospitals is shown by the census of 1941 to have been at the average of 22

to compare with similar maps published in the Hospital numbers for preceding years. Of course no state has an even rate of occupancy of hospitals all over the state—in fact, the hospitals of a state may vary from the lowest to the highest rates. The states having an average occupancy of 50 to 60 per cent increased in number from 4 to 10 during the past year. There is still, as last year, one state whose general hospitals averaged less than 50 per cent occupied. Those having a rate of 60 to 70 reduced in number from 28 to 26,

in Nevada. Other states ranking high in the number of general hospital beds per thousand are: Arizona, 7.4; Wyoming, 6.0; California, 5.9; Massachusetts, 5.9; Washington, 5.8; Colorado, 5.7; Louisiana, 5.7; Florida, 5.1.

The outstanding fact to be observed is that those states which provide few beds are found to have a low

**TOTAL
NONGOVERNMENTAL**

the number of general hospital beds per thousand of population. The table also gives for each state the percentage of occupancy in general hospitals and the percentage of population that entered general hospitals during the year, as well as the 1940 population census of the states.

rate of occupancy and, of course, a small proportion of the population making use of hospitals. For example, Utah, with 2.1 general hospital beds per thousand, shows an occupancy rate of 55.3 per cent, and its general hospitals were used by 3.5 per cent of the state's population. Nevada, with 8 beds per thousand, had an occupancy rate of 63.4 per cent; 12.3 per cent of the population of the state made use of its general hospitals during the

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE

Marginal No.	General					Nervous and Mental					Tuberculosis					Maternity					Industrial					Eye, Ear, Nose and Throat				
	Hospitals	Beds	Basinets	Patients Admitted	Average Census	Hospitals	Beds	Basinets	Patients Admitted	Average Census	Hospitals	Beds	Basinets	Patients Admitted	Average Census	Hospitals	Beds	Basinets	Patients Admitted	Average Census	Hospitals	Beds	Basinets	Patients Admitted	Average Census					
1	Alabama	72	6,094	569	12,204	3,550	8	8,819	1,023	1,023	1,023	15	1,071	1,023	1,023	1,023	15	1,071	1,023	1,023	1,023	15	1,071	1,023	1,023	1,023				
2	Arizona	22	3,779	315	5,082	2,041	2	5,082	2,041	2,041	2,041	2	5,082	2,041	2,041	2,041	2	5,082	2,041	2,041	2,041	2	5,082	2,041	2,041	2,041				
3	Arkansas	62	5,451	356	8,778	1,077	34	32,433	12,912	20,022	20,022	37	5,240	3,141	4,515	1,290	37	5,240	3,141	4,515	1,290	37	5,240	3,141	4,515	1,290				
4	California	20	40,450	3,417	701,264	29,213	34	32,433	12,912	20,022	20,022	37	5,240	3,141	4,515	1,290	37	5,240	3,141	4,515	1,290	37	5,240	3,141	4,515	1,290				
5	Colorado	68	6,900	675	106,040	4,363	15	11,587	2,512	3,908	3,908	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743				
6	Connecticut	47	7,009	1,195	24,569	1,195	15	11,587	2,512	3,908	3,908	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743				
7	Delaware	10	1,310	208	24,569	1,195	15	11,587	2,512	3,908	3,908	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743				
8	District of Columbia	10	1,310	208	24,569	1,195	15	11,587	2,512	3,908	3,908	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743	6	1,743	1,743	1,743	1,743				
9	Florida	104	12,354	843	101,804	101,804	6	5,815	5,815	5,815	5,815	3	1,002	1,002	1,002	1,002	3	1,002	1,002	1,002	1,002	3	1,002	1,002	1,002	1,002				
10	Georgia	80	12,354	843	101,804	101,804	6	5,815	5,815	5,815	5,815	3	1,002	1,002	1,002	1,002	3	1,002	1,002	1,002	1,002	3	1,002	1,002	1,002	1,002				
11	Idaho	20	30,233	4,202	1	1	30	46,920	25	14,963	14,963	71	4,206	1	1,743	1,743	71	4,206	1	1,743	1,743	71	4,206	1	1,743	1,743				
12	Illinois	210	30,233	4,202	1	1	30	46,920	25	14,963	14,963	71	4,206	1	1,743	1,743	71	4,206	1	1,743	1,743	71	4,206	1	1,743	1,743				
13	Indiana	91	9,723	1,433	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
14	Iowa	121	7,515	1,205	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
15	Kansas	95	7,001	830	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
16	Kentucky	73	7,001	830	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
17	Louisiana	65	13,423	837	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
18	Maine	42	9,115	853	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
19	Maryland	145	22,030	2,853	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
20	Massachusetts	177	21,917	2,702	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
21	Michigan	160	21,801	2,702	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
22	Minnesota	88	5,068	482	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
23	Mississippi	97	14,946	1,340	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
24	Missouri	88	4,637	752	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
25	Montana	18	870	120	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
26	Nebraska	88	4,637	752	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
27	Nevada	30	2,957	422	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
28	New Hampshire	88	10,409	2,037	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
29	New Jersey	41	9,243	975	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
30	New Mexico	124	62,551	7,753	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
31	New York	134	11,130	1,130	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
32	North Carolina	141	2,520	2,515	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
33	North Dakota	152	20,077	2,515	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
34	Ohio	106	6,041	735	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
35	Oklahoma	227	30,071	4,917	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
36	Oregon	56	4,731	600	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
37	Pennsylvania	13	2,46	210	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
38	Rhode Island	56	5,608	484	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
39	South Carolina	40	2,714	402	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734	1,734				
40	South Dakota	73	7,178	739	1	1	12	11,967	3,610	14,407	14,407	11	1,734	1,734	1,734	1,734	11	1,734	1,734	1,734										

TABLE 2. HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued)

Largest No.	Children's				Orthopedic				Isolation				Convalescent and Rest				Hospital Departments of Institutions				All Other Hospitals				Totals	
	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average		
1	Alabama	1	60	1,383	31	1	369	36	1	10	310	8	4	208	1	4,410	121	05	10,340	650	156,116					
2	Arkonia	1	75	8	1,430	61	1	946	56	2	207	141	184	3	300	2	3,900	213	60	53,828						
3	Arkansas	1	280	8,024	188	2	2,292	122	1	16	569	2,195	406	15	107	20,407	4,448	305	12,806	380	94,828					
4	California	1	240	4,260	121	2	540	53	7	542	2,071	599	10	300	8	2,922	233	83	21,711	1,213	178,500					
5	Colorado	1	240	4,260	121	2	540	53	7	542	2,071	599	10	300	8	2,922	233	83	21,711	1,213	178,500					
6	Connecticut	1	200	6,353	142	1	55	120	70	2	207	141	184	3	300	2	3,900	213	105	16,246	704	126,100				
7	Delaware	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
8	District of Columbia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
9	Florida	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
10	Georgia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
11	Illinois	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
12	Indiana	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
13	Iowa	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
14	Kansas	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
15	Kentucky	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
16	Louisiana	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
17	Maine	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
18	Massachusetts	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
19	Michigan	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
20	Minnesota	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
21	Mississippi	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
22	Missouri	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
23	Montana	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
24	Nebraska	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
25	Nevada	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
26	New Hampshire	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
27	New Jersey	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
28	New Mexico	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
29	New York	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
30	North Carolina	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
31	North Dakota	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
32	Ohio	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
33	Oklahoma	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
34	Oregon	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
35	Pennsylvania	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
36	Rhode Island	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
37	South Carolina	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
38	South Dakota	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
39	Tennessee	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
40	Texas	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
41	Utah	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
42	Vermont	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
43	Virginia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
44	Washington	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
45	West Virginia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
46	Wisconsin	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
47	Wyoming	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
48	Totals	1	60	1,383	31	1	369	36	1	10	310	8	4	208	1	4,410	121	05	10,340	650	156,116					
49	Alabama	1	60	1,383	31	1	369	36	1	10	310	8	4	208	1	4,410	121	05	10,340	650	156,116					
50	Arkonia	1	75	8	1,430	61	1	946	56	2	207	141	184	3	300	2	3,900	213	60	53,828						
51	Arkansas	1	280	8,024	188	2	2,292	122	1	16	569	2,195	406	15	107	20,407	4,448	305	12,806	380	94,828					
52	California	1	240	4,260	121	2	540	53	7	542	2,071	599	10	300	8	2,922	233	83	21,711	1,213	178,500					
53	Colorado	1	240	4,260	121	2	540	53	7	542	2,071	599	10	300	8	2,922	233	83	21,711	1,213	178,500					
54	Connecticut	1	200	6,353	142	1	55	120	70	2	207	141	184	3	300	2	3,900	213	105	16,246	704	126,100				
55	Delaware	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
56	District of Columbia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
57	Florida	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
58	Georgia	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
59	Illinois	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
60	Indiana	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
61	Iowa	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
62	Kansas	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
63	Kentucky	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
64	Louisiana	1	40	1,022	76	2	170	633	148	1	80	166	38	3	303	2	3,900	213	105	16,246	704	126,100				
65	Maine																									

year. Oregon, the twenty-fourth state, or midway point, in number of general hospital beds per thousand, shows an occupancy rate of 73.0 per cent, and 9.9 per cent of its population entered a general hospital. The District of Columbia is not comparable, evidently because of the use of its hospital facilities by a considerable number of persons not enumerated in its census of population.

Average figures for the entire country show 4.1 general beds per thousand of population, an average occupancy of 68.2 per cent and 8.1 per cent of the entire population entering general hospitals as patients.

The table serves to emphasize the fact that hospital facilities must be provided not according to any abstract formula but in accordance with the requirements of the people in the community under consideration.

The map entitled "General Hospital Beds per Thousand of Population" tells the story of general hospital facilities in graphic form.

BIRTHS IN HOSPITALS

Response to the question "How many live births in the hospital during the year?" brought a total of 1,404,940. The total number of births reported in the United States both in and out of hospitals is not obtainable for the year 1941. In 1940 it was 2,360,399. Increase in births in hospitals in 1941 over those in 1940 was 190,448, which is by far the greatest increase recorded for this item between any two consecutive years. The gain of 1940 over 1939 was 114,779. In 1929, the first year in which the annual census of hospitals recorded the hospital births, there were 621,896. The table on births in hospitals gives some indication as to just what groups of hospitals are furnishing the maternity services and also shows interesting trends. As to type of service general hospitals report 1,342,195 births, and maternity hospitals 51,484. There is considerable increase from year to year in the number of

Births in Hospitals

	1929	1940	1941
According to Ownership or Control:			
Federal.....	2,296	9,423	11,811
State.....	9,125	28,943	32,113
County.....	17,827	61,963	66,689
City.....	45,787	98,433	112,962
City-county.....	8,806	15,497	15,497
Total governmental.....	83,541	213,211	239,072
Church.....	203,726	394,765	463,111
Fraternal.....	1,730	48,236	561,844
Nonprofit associations.....	4,827	.....	.....
Industrial.....	253,136	.....	.....
Independent associations.....	.....	880,001	1,024,955
Total nonprofit.....	.....	880,001	1,024,955
Individual and partnership.....	39,436	67,329	79,754
Corporations (profit unrestricted).....	.....	58,881	61,159
Total proprietary.....	.....	121,280	140,913
Total nongovernmental.....	538,355	1,001,281	1,165,868
According to Type of Service:			
General.....	566,177	1,163,694	1,342,195
Maternity.....	53,019	48,126	51,484
.....	862	1,054	7,946
.....	277	.....	398
.....	1,561	516	2,917
Total births in all hospitals.....	621,896	1,214,402	1,404,940

births in the hospitals operated by federal and state governments as well as in the county and city hospitals. Church related hospitals reported the births of 463,111 infants as compared with 394,765 last year. Other non-profit associations reported 561,844 as against 485,236 last year.

The hospital births by states are given in the column headed "Births" in one of the accompanying tables.

There are nine states in which the number of births in hospitals exceeded 50,000, headed naturally by New York, which reported 180,037 births, followed by Pennsylvania 112,392, Illinois 99,997, California 85,763, Ohio 82,677, Michigan 69,670, New Jersey 60,761, Texas 59,564 and Massachusetts 57,642.

NUMBER OF PATIENTS OPERATED ON
IN ALL HOSPITALS

In this, the twenty-first, annual census all registered hospitals, including those approved and those not approved for intern or residency training, were asked for the first time to "indicate number of patients oper-

Patients Admitted, Patients Operated on, Births, Deaths
and Autopsies in All Hospitals

	Patients Admitted	Patients Operated on	Births	Deaths	Autopsies Reported
Alabama.....	156,116	59,950	14,243	5,994	1,000
Arizona.....	58,828	19,558	5,625	2,183	140
Arkansas.....	94,828	35,913	6,730	3,228	373
California.....	771,827	314,995	85,763	34,650	10,872
Colorado.....	120,063	51,483	12,281	5,267	1,722
Connecticut.....	178,509	92,689	25,505	7,861	2,570
Delaware.....	25,315	12,296	3,711	1,271	342
Dist. of Columbia....	126,160	57,718	17,465	5,526	2,778
Florida.....	169,741	62,985	10,889	7,548	1,166
Georgia.....	233,605	90,321	21,047	7,232	1,285
Idaho.....	41,506	18,411	4,428	1,625	143
Illinois.....	779,644	374,171	99,997	37,310	9,064
Indiana.....	246,402	125,998	35,938	11,681	2,683
Iowa.....	190,829	85,120	25,978	7,849	1,424
Kansas.....	142,975	59,564	15,934	5,593	1,290
Kentucky.....	158,141	69,807	13,795	6,690	1,000
Louisiana.....	261,882	87,384	22,781	8,872	2,818
Maine.....	66,112	32,871	7,251	2,635	441
Maryland.....	166,715	80,314	19,452	8,184	2,574
Massachusetts.....	474,108	231,535	57,642	21,813	6,489
Michigan.....	495,088	233,746	69,670	20,795	5,307
Minnesota.....	294,894	126,007	36,569	12,323	3,783
Mississippi.....	117,697	45,227	8,606	4,139	254
Missouri.....	294,612	131,848	31,226	13,658	4,384
Montana.....	64,218	21,767	8,565	2,620	262
Nebraska.....	91,271	46,258	11,663	3,725	1,160
Nevada.....	14,119	4,515	1,517	577	88
New Hampshire.....	51,465	26,347	6,904	2,407	437
New Jersey.....	362,917	172,140	60,761	20,556	4,626
New Mexico.....	37,883	10,818	4,214	1,597	174
New York.....	1,391,823	643,773	180,037	74,445	20,480
North Carolina.....	271,566	116,900	24,150	9,238	1,301
North Dakota.....	60,805	24,285	7,294	2,103	531
Ohio.....	550,668	267,311	82,677	27,448	6,054
Oklahoma.....	153,167	58,724	16,815	5,215	733
Oregon.....	112,851	48,309	14,283	4,333	1,333
Pennsylvania.....	774,533	423,734	112,392	37,889	9,829
Rhode Island.....	49,576	27,376	8,994	3,103	518
South Carolina.....	151,112	49,560	11,091	5,445	491
South Dakota.....	53,321	20,578	6,072	1,490	207
Tennessee.....	189,000	86,068	18,383	8,079	1,321
Texas.....	549,315	213,087	59,564	17,030	2,766
Utah.....	44,624	21,997	9,768	1,688	218
Vermont.....	36,730	15,466	3,987	1,436	274
Virginia.....	248,370	99,707	19,671	8,916	1,531
Washington.....	215,480	73,816	22,902	8,004	2,201
West Virginia.....	141,827	74,534	10,537	5,067	1,005
Wisconsin.....	290,799	146,387	38,976	12,435	2,766
Wyoming.....	29,422	8,222	3,227	933	91
Totals.....	11,596,188	5,201,630	1,404,940	510,158	125,940

ated on." The numbers reported in answer to this question are published by states, alongside the number of patients admitted, in an adjoining table. The total number of patients operated on is 5,201,650, or 44.86 per cent of the patients admitted.

In making up the questionnaire for the census, much consideration was given to the wording of this and similar questions. The form of question just quoted was finally determined on as being the most appropriate for this time, since confusion sometimes results when attempts are made to define the various types of operative procedures.

The response to this question has been, in the main, quite satisfactory and the question was followed up whenever necessary. As would be expected, the states that reported the highest number of patients operated

on are New York 643,773, Pennsylvania 423,734, Illinois 374,171, California 314,995, Ohio 267,311 and Michigan 233,746.

Those states in which the number of patients operated on exceeded 50 per cent or more of all patients admitted were Rhode Island 55.22 per cent, Pennsylvania 54.71 per cent, West Virginia 52.55 per cent, Connecticut 51.92 per cent, New Hampshire 51.19 per cent, Indiana 51.13 per cent, Nebraska 50.68 per cent and Wisconsin 50.34 per cent.

The states in which the number of patients operated on were less than 35 per cent of all patients admitted

In response to the question as to the number of necropsies, there is reported a total of 125,640 necropsies, or 24.63 per cent of the number of deaths reported. Owing to the Council requirement of a minimum percentage of necropsies in the approved internship and residency hospitals and the fact that hospitals so approved had a majority of admissions, it is not surprising that the greater number of necropsies would be performed in the approved hospitals, which reported a total of 96,151. These hospitals, totaling 1,070, had an average necropsy rate of 38.4 per cent, whereas all other registered hospitals had a necropsy incidence of 11.3

Technical Personnel in All Hospitals, 1941

	Laboratory Technicians		X-Ray Technicians		Dietitians		Physical Therapists		Pharmacists		Medical Record Librarians		Other Librarians		Medical Stenographers		Occupational Therapists		Dental Hygienists		Social Service Workers	
	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Full Time	Part Time	Volun- Paid	tary
Alabama.....	102	24	75	24	58	14	20	3	21	1	32	10	2	3	100	16	14	4	9	9	12	9
Arizona.....	49	12	29	15	24	2	9	4	12	1	13	9	4	4	24	11	6	8	7	9	4	7
Arkansas.....	97	18	58	15	45	6	19	4	17	2	27	8	8	3	65	17	16	5	9	11	4	9
California.....	589	92	377	96	303	26	233	39	204	60	172	32	50	27	370	57	78	42	45	55	233	95
Colorado.....	114	18	74	31	63	8	37	8	36	5	31	17	13	8	55	12	21	9	11	13	27	14
Connecticut.....	144	29	101	18	103	5	46	9	38	9	53	8	9	5	115	18	66	17	10	4	52	8
Delaware.....	27	3	11	5	18	1	8	..	7	1	8	2	..	..	29	1	10	1	4	3	11	1
Dist. of Columbia.....	111	10	40	8	..	..	50	1	29	2	29	3	8	3	93	5	29	3	22	4	35	2
Florida.....	121	29	80	31	57	8	27	14	41	3	37	13	8	7	78	15	7	4	19	6	24	5
Georgia.....	177	48	104	39	94	13	40	8	40	10	58	17	8	0	117	22	12	1	19	6	24	13
Idaho.....	23	10	17	7	13	3	6	1	3	1	8	5	..	1	12	4	5	..	2	2	1	..
Illinois.....	591	72	382	70	336	17	164	19	180	22	182	40	40	38	325	34	123	16	53	24	141	49
Indiana.....	197	27	115	29	95	7	30	15	43	5	44	14	19	17	85	23	43	9	14	14	32	27
Iowa.....	132	38	104	44	76	14	38	10	38	19	54	31	11	9	84	31	26	7	13	9	23	6
Kansas.....	128	27	79	22	61	10	33	19	32	9	38	27	10	5	61	20	10	4	12	10	15	4
Kentucky.....	129	15	85	26	60	6	26	4	23	2	43	9	11	4	83	9	24	5	30	10	31	6
Louisiana.....	151	21	98	24	83	1	31	4	40	5	63	0	11	4	78	11	8	3	12	10	45	4
Maine.....	59	14	33	17	38	3	17	3	13	1	24	7	3	2	29	6	8	1	3	1	8	1
Maryland.....	152	12	63	15	101	3	43	8	52	4	35	11	11	3	140	13	40	13	9	12	69	4
Massachusetts.....	450	65	293	01	253	13	102	30	100	18	159	31	32	29	387	00	154	20	49	17	232	41
Michigan.....	410	61	239	01	208	15	118	15	87	20	117	33	21	20	200	38	93	10	22	27	117	20
Minnesota.....	201	40	133	45	120	16	34	8	40	12	07	24	17	15	76	21	33	7	15	8	67	14
Mississippi.....	88	35	64	25	54	20	9	8	11	3	10	19	4	3	60	21	41	1	5	4	0	..
Missouri.....	240	29	147	20	103	14	50	7	57	13	68	20	10	5	100	27	35	6	17	20	64	12
Montana.....	41	25	29	12	21	4	13	8	0	3	22	7	5	5	15	8	..	2	2	3	3	1
Nebraska.....	174	18	43	22	40	6	19	8	20	3	22	16	6	1	26	10	13	3	10	3	10	1
Nevada.....	12	4	8	4	0	..	1	1	6	1	0	2	..	2	8	1	..	..	2	1	..	..
New Hampshire.....	45	10	32	14	29	5	0	7	10	4	21	0	3	2	23	11	8	3	1	2	5	..
New Jersey.....	317	42	168	29	217	6	98	30	77	12	112	23	15	9	186	24	115	15	32	27	123	60
New Mexico.....	30	15	19	18	21	3	8	4	6	2	25	0	2	3	2	8	2	2	5	10	1	1
New York.....	1,328	162	657	127	625	56	490	00	354	50	400	00	109	00	885	70	396	42	110	51	766	260
North Carolina.....	198	40	125	42	143	22	50	0	32	4	85	33	20	7	185	30	11	4	61	9	19	50
North Dakota.....	39	23	28	18	22	3	10	0	5	3	12	14	1	5	15	12	5	3	1	2	3	2
Ohio.....	490	74	220	52	275	9	108	19	100	24	127	37	43	34	246	40	00	13	20	36	116	9
Oklahoma.....	122	28	77	31	68	6	19	12	25	3	42	12	9	7	66	15	10	2	17	11	21	1
Oregon.....	90	23	55	18	36	2	18	12	18	8	28	7	5	..	42	7	..	..	6	4	13	2
Pennsylvania.....	712	80	328	67	417	14	177	49	170	58	221	45	31	32	377	55	139	16	65	33	283	304
Rhode Island.....	50	5	37	5	34	..	17	4	24	5	23	5	3	4	04	4	19	3	9	1	34	10
South Carolina.....	131	43	89	30	74	5	9	5	32	9	30	31	3	12	55	13	..	7	20	7	18	4
South Dakota.....	31	21	23	15	20	7	10	7	7	1	14	14	5	..	90	7	4	1	2	3	2	1
Tennessee.....	132	33	76	28	79	15	23	6	26	5	31	13	12	5	92	19	16	3	15	9	23	7
Texas.....	535	113	315	75	237	18	91	24	127	22	183	63	33	9	397	49	35	6	65	23	75	42
Utah.....	23	6	10	0	20	2	4	3	5	..	11	2	4	1	8	7	..	5	7	3	7	..
Vermont.....	24	7	13	8	14	3	12	2	6	..	14	5	1	4	20	6	10	..	3	2	..	..
Virginia.....	210	42	109	54	128	10	46	8	36	11	62	25	14	12	127	33	22	3	22	14	30	65
Washington.....	126	33	106	35	90	9	42	9	45	12	48	18	7	7	90	13	22	3	17	13	44	21
West Virginia.....	121	15	69	12	56	7	21	7	9	4	39	9	8	5	84	12	19	4	8	10	4	3
Wisconsin.....	215	56	133	52	104	21	67	23	42	25	68	34	8	10	119	32	40	13	15	16	32	6
Wyoming.....	25	3	20	5	12	1	11	2	4	..	8	2	1	1	17	6	7	..	3	6	2	..
Total all hospitals.....	9,009	1,676	5,534	1,335	5,548	459	2,505	602	2,382	497	3,035	697	678	464	6,016	990	1,882	350	919	593	2,030	1,225
General hospitals.....	8,169	1,323	4,781	1,195	4,406	335	1,781	443	1,932	395	2,640	732	481	315	3,903	683	1,317	124	540	230	1,907	972
Other than general.....	1,440	353	753	340	1,142	124	724	159	400	102	395	165	197	149	2,113	307	1,565	226	339	373	1,023	253

were Wyoming 27.95 per cent, New Mexico 28.55 per cent, Nevada 31.98 per cent, South Carolina 32.8 per cent, Louisiana 33.37 per cent, Montana 33.90 per cent and Washington 34.26 per cent.

DEATHS AND NECROPSIES IN ALL HOSPITALS

The census questionnaire included the question "Number of deaths." The same question had been included in the annual census for at least two previous years. The total number of deaths reported from all the hospitals was 510,158, or 4.4 per cent of the patients admitted. Considering that all hospitals are accustomed to furnishing this information, it is believed that the figures presented in the column headed "Deaths" are fairly accurate.

per cent on the basis of 260,068 deaths and 29,489 post-mortem examinations last year.

In view of the educational importance of necropsies, this subject is discussed at greater length in that part of the article relating to internships, residencies and fellowships.

TECHNICAL PERSONNEL IN HOSPITALS, 1941

The census of technical personnel in hospitals reported in THE JOURNAL of March 27, 1937 was the first that rendered information complete enough for practical use. At that time the data received were tabulated to present by states the number of hospitals employing technical assistants and the number employed. The current census includes four groups not

previously reported, i e medical record librarians, other librarians, medical stenographers and social service workers, thus enabling the Council to present a more complete picture of the services rendered in hospitals by trained personnel other than physicians.

In the present census the full time and part time workers are enumerated separately, which reveals that only 18 per cent of the 50,326 individuals enumerated are serving on a part time basis. The part time group not only includes persons who are employed part time because of economic reasons but also in some instances persons who are offering their services to institutions on a voluntary basis.

Comparison of data received from all hospitals with those from general hospitals indicates that general hospitals employ nearly 75 per cent of all technical personnel engaged in hospital work and 75 per cent of all the full time employees.

PHYSICIAN SUPERINTENDENTS, NURSING PERSONNEL,
PRACTICAL NURSES, ATTENDANTS AND ORDERLIES

It is found that 2,133 physicians are serving as superintendents or administrators of hospitals. The proportion of superintendents thus qualified is 33.54

Physician Superintendents, Nursing Personnel, Practical
Nurses, Attendants and Orderlies

State	Hospitals		Hospitals		Hospitals		Hospitals		Total—	
	Deaths	Autopsies	Deaths	Autopsies	Deaths	Autopsies	Deaths	Autopsies	All Approved Hospitals	Autopsies
Alabama	282	75	1,363	426	508	114	2,141	610		
Arizona	377	172			148	43	525	215		
Arkansas	511	149	136	27	48	10	696	186		
California	3,767	1,697	10,105	5,190	1,217	555	15,069	7,472		
Colorado	1,030	352	1,240	773	618	150	2,914	1,275		
Connecticut	2,969	1,169	1,810	900	735	203	5,517	2,242		
Delaware	362	163	187	72	107	34	576	259		
Dist of Columbia	381	327	3,277	1,691	744	460	4,405	2,476		
Florida	522	109	1,258	369	30	16	1,818	654		
Georgia	1,159	216	1,576	672	90	66	2,826	481		
Illinois	6,147	2,026	10,348	3,558	3,003	1,214	20,098	6,798		
Indiana	1,961	411	2,192	1,015	769	192	4,912	1,618		
Iowa	1,643	437	584	248	217	76	2,444	861		
Kansas	571	265	645	370	185	33	1,574	609		
Kentucky	1,293	296	1,364	420	102	73	2,750	749		
Louisiana	1,722	746	2,962	1,289	52	6	4,736	2,041		
Maine	831	280			40	14	871	294		
Maryland	240	163	4,372	1,906	390	199	5,002	2,908		
Massachusetts	5,305	1,523	4,398	2,564	3,433	1,577	13,136	5,661		
Michigan	2,227	741	6,064	2,549	2,802	902	11,093	4,192		
Minnesota	1,717	745	2,186	1,432	939	362	4,862	2,539		
Mississippi					46	14	46	14		
Missouri	1,932	778	4,644	2,792	1,423	548	7,900	4,118		
Montana	227	54					227	54		
Nebraska	611	207	517	225	471	212	1,620	644		
New Hampshire	103	33	125	105	295	83	528	226		
New Jersey	7,169	1,912	4,150	1,382	1,716	459	18,044	3,737		
New York	9,499	2,868	28,936	10,850	8,115	2,707	49,350	16,865		
North Carolina	709	208	679	422	464	84	2,122	711		
North Dakota			153	135	194	72	347	207		
Ohio	2,713	840	10,693	3,096	2,081	725	14,587	5,561		
Oklahoma	647	135	773	285	14	3	1,434	423		
Oregon	184	65	1,499	798	303	112	1,986	1,000		
Pennsylvania	9,487	3,130	10,740	5,735	2,280	713	22,507	9,578		
Rhode Island	670	212	496	236	456	200	1,662	603		
South Carolina	1,016	166	559	235			1,575	401		
Tennessee	939	192	3,200	915	263	63	4,407	1,170		
Texas	3,621	894	2,590	825	861	201	6,472	1,970		
Utah	1,041	330					1,041	330		
Vermont	128	44	165	73			293	117		
Virginia	657	243	1,334	457	415	186	2,406	886		
Washington	2,642	793	1,297	572	657	402	4,596	1,767		
West Virginia	1,067	297			779	257	1,846	584		
Wisconsin	2,713	850	1,953	715	458	161	5,154	1,746		
Totals	82,260	26,263	120,675	50,324	38,155	13,564	200,090	96,151		

Schools of nursing number 1,448 with 93,977 students. In 1926 there were 2,155 schools with 76,527 students, and in 1936, 1,478 with 72,174 students.

In response to the question as to how many graduate nurses, and also how many practical nurses, attendants and orderlies are employed at nursing by hospitals, we have the total of 112,842 graduate nurses, 17,332 practical nurses, 95,002 attendants and 24,837 orderlies.

Necropsy Performance in Approved Hospitals—1941
(See Page 1068)

State	Hospitals		Hospitals		Hospitals		Hospitals		Total—	
	Deaths	Autopsies	Deaths	Autopsies	Deaths	Autopsies	Deaths	Autopsies	All Approved Hospitals	Autopsies
Alabama	282	75	1,363	426	508	114	2,141	610		
Arizona	377	172			148	43	525	215		
Arkansas	511	149	136	27	48	10	696	186		
California	3,767	1,697	10,105	5,190	1,217	555	15,069	7,472		
Colorado	1,030	352	1,240	773	618	150	2,914	1,275		
Connecticut	2,969	1,169	1,810	900	735	203	5,517	2,242		
Delaware	362	163	187	72	107	34	576	259		
Dist of Columbia	381	327	3,277	1,691	744	460	4,405	2,476		
Florida	522	109	1,258	369	30	16	1,818	654		
Georgia	1,159	216	1,576	672	90	66	2,826	481		
Illinois	6,147	2,026	10,348	3,558	3,003	1,214	20,098	6,798		
Indiana	1,961	411	2,192	1,015	769	192	4,912	1,618		
Iowa	1,643	437	584	248	217	76	2,444	861		
Kansas	571	265	645	370	185	33	1,574	609		
Kentucky	1,293	296	1,364	420	102	73	2,750	749		
Louisiana	1,722	746	2,962	1,289	52	6	4,736	2,041		
Maine	831	280			40	14	871	294		
Maryland	240	163	4,372	1,906	390	199	5,002	2,908		
Massachusetts	5,305	1,523	4,398	2,564	3,433	1,577	13,136	5,661		
Michigan	2,227	741	6,064	2,549	2,802	902	11,093	4,192		
Minnesota	1,717	745	2,186	1,432	939	362	4,862	2,539		
Mississippi					46	14	46	14		
Missouri	1,932	778	4,644	2,792	1,423	548	7,900	4,118		
Montana	227	54					227	54		
Nebraska	611	207	517	225	471	212	1,620	644		
New Hampshire	103	33	125	105	295	83	528	226		
New Jersey	7,169	1,912	4,150	1,382	1,716	459	18,044	3,737		
New York	9,499	2,868	28,936	10,850	8,115	2,707	49,350	16,865		
North Carolina	709	208	679	422	464	84	2,122	711		
North Dakota			153	135	194	72	347	207		
Ohio	2,713	840	10,693	3,096	2,081	725	14,587	5,561		
Oklahoma	647	135	773	285	14	3	1,434	423		
Oregon	184	65	1,499	798	303	112	1,986	1,000		
Pennsylvania	9,487	3,130	10,740	5,735	2,280	713	22,507	9,578		
Rhode Island	670	212	496	236	456	200	1,662	603		
South Carolina	1,016	166	559	235			1,575	401		
Tennessee	939	192	3,200	915	263	63	4,407	1,170		
Texas	3,621	894	2,590	825	861	201	6,472	1,970		
Utah	1,041	330					1,041	330		
Vermont	128	44	165	73			293	117		
Virginia	657	243	1,334	457	415	186	2,406	886		
Washington	2,642	793	1,297	572	657	402	4,596	1,767		
West Virginia	1,067	297			779	257	1,846	584		
Wisconsin	2,713	850	1,953	715	458	161	5,154	1,746		
Totals	82,260	26,263	120,675	50,324	38,155	13,564	200,090	96,151		

HOSPITAL FACILITIES NOT IN THE REGISTER

The facilities that are omitted from the list of registered hospitals are of two types: first, those that follow methods and practices such as are generally recognized as unethical or dangerous and that therefore need complete change of policy before being recommended to the public. Their number at the present time is 542. Their capacity, according to the latest available information is 16,267, or less than two thirds of 1 per cent of the facilities furnished by the hospitals recognized in the Register.

A second class of facilities not appearing in the Register includes emergency stations, clinics, offices and so on, with some facilities for bed care attached or available. They are recognized as ethical and valuable auxiliary facilities to the hospital system. Most of these unclassified facilities have three to ten beds each, which are used as occasion demands. Some of them are sick-rooms attached to small custodial institutions. The bed capacity of these institutions, usually spoken of as unclassified, is too variable to be positively enumerated.

per cent. This proportion has not varied more than 1 or 2 per cent for over a period of ten years. A further analysis of the types of hospitals that are thus served by physicians will be made.

INTERNSHIPS, RESIDENCIES AND FELLOWSHIPS

(As of March 1, 1942)

NUMBER OF INTERNSHIPS

The increase of internships from 1914 to 1942 is illustrated in table A, showing the number of hospitals and available internships in relation to the annual output of American medical colleges. When the first list was published by the American Medical Association in 1914 there were 508 general hospitals approved by the Council, 2,667 internships available and 3,594 medical graduates. In addition there were 60 special hospitals and 35 state institutions and hospitals for the insane that offered a total of 428 internships later classified as residencies in specialties. Thus 603 general and special hospitals supplied 3,095 internships, but only 2,527 appointments were made, indicating that 1,067, or approximately 30 per cent of the medical graduates, did not seek additional hospital training.

Internships continued to increase as hospitals found a growing need for the services of interns not only to fulfil the educational requirements of the Council and the standardization program of the American College of Surgeons but to keep pace with the rapid progress of medical practice and the introduction of new methods of diagnosis and therapy. It was not until 1926, however, that available internships began to exceed the number of students graduating each year, although an exception occurred in 1922, when the senior class was considerably reduced on account of the earlier influence of the war. From then on there has been a steady increase in educational facilities for interns even beyond the annual needs of the graduating classes, which have remained fairly constant in size since 1934. Some of the increase has been produced by the qualification of additional hospitals, yet the enlargement of intern staffs resulting in many instances from an expansion of bed capacity or rising admission rate and average daily census has also been a significant factor. It should be noted that the proportion of medical graduates seeking hospital appointment has increased from approximately 70 per cent in 1914 to 99 per cent in recent years. This expansion of internships has been made possible by the whole hearted cooperation of a large number of hospitals throughout the country, which have not only supplied current needs but have created a sufficient reserve to meet any new demands that may be placed on them from time to time. According to reports received in January 1942, 7,228 internships are now available annually in the 732 hospitals approved for intern training by the American Medical Association.

NUMBER OF VACANCIES

While it would seem that the number of available internships has been excessive in recent years, it must be taken into consideration that many of the surplus appointments are filled by second year interns, foreign graduates and applicants from the medical schools of Canada and several of the Central and South American countries. In 1939, when there were 5,089 medical graduates in the United States, the approved intern hospitals reported a total of 7,448 interns actually on duty. According to information received at that time, the number of vacancies was only 317. Further reports also seem to indicate that the demand for interns has not greatly exceeded the supply of available candidates except perhaps in the last two years. In January 1940,

for example, after the annual reports on internships had been received, it was found that 176 hospitals had 344 vacancies: 60 in public hospitals and 284 in institutions under private control. By January 1941, however, the number of vacancies had increased to 615 in 270 hospitals, and reports received in January 1942 show a total of 1,128 unfilled positions in 437 of the hospitals approved for intern training (see table B). These institutions, however, employ 201 second year interns under the classification of mixed residencies, so that the present shortage might be considered as only 927. This coincides with the reports from the approved hospitals showing that 7,219 interns are currently employed whereas 8,181 positions are actually available.

FUTURE NEEDS

It is obvious that an exact balance cannot always be maintained between the number of available internships and the annual supply of medical graduates, since variations may frequently occur not only in the enrolment of medical students but also in the number of hospitals that wish to participate in the training of interns. In order that all students may obtain acceptable training during their fifth year of medicine, it is usually necessary that a surplus of qualified internships be available, as eligibility requirements and individual preferences may limit the assignment of interns in certain hospitals. When any considerable excess develops, however, it becomes increasingly difficult for many hospitals to secure sufficient interns to maintain a satisfactory educational program unless the training schedule can be bolstered by the addition of second year men. If this is not possible, a solution may perhaps be found in the establishment of mixed residencies or in the employment of salaried house officers outside the scope of an educational service. In many instances it will no doubt become necessary for the attending physicians and their assistants to take over some of the functions ordinarily assigned to interns and residents, although certain routine procedures might well be allocated to qualified nursing and technical personnel.

As regards future needs, it is encouraging to note that if medical students and interns avail themselves of the War Department plan described in *THE JOURNAL*, Feb. 21, 1942, pages 633-634 and secure deferment during their period of undergraduate training there will be no material reduction in the number of interns available for hospital service. However, it is quite likely that some of the civilian hospitals will experience a further shortage in view of the increasing demand for interns in federal hospitals, the reduction of the longer services to one year and the appointment of additional interns in some institutions to compensate for the loss of resident physicians.

Under present conditions it would seem particularly essential that all intern hospitals cooperate in maintaining as uniform a distribution of interns as is practicable in relation to the clinical and educational functions of the various institutions. This will require first of all a reappraisal of the needs of individual hospitals, a task that should be undertaken jointly by the superintendent and the members of the intern committee. Economy in the use of interns can thus be achieved not only from a numerical point of view but also in relation to individual duties and assignments. Obviously the utilization

of an excessive number of interns in any institution will create a corresponding deficiency in the remaining hospitals. In this connection it can be mentioned that the average intern-patient ratio in the hospitals approved for intern training is usually one intern to six hundred annual admissions.

TABLE A.—Number of Internships, 1914-1942

	Number of Hospitals	Available Internships	Medical Graduates (United States)
1914.....	503	2,667	3,504
1915.....	610	2,709	3,518
1916.....	469	2,960	3,047
1917.....	482	2,962	3,166
1918.....	492	3,065	2,580
1919.....	500	3,110	3,120
1920.....	518	3,260	3,562
1921.....	528	3,682	3,974
1922.....	534	4,727	3,962
1923.....	578	4,952	4,053
1924.....	611	5,100	4,262
1925.....	624	5,409	4,446
1926.....	634	5,531	4,565
1927.....	674	6,154	4,733
1928.....	696	6,261	4,936
1929.....	689	6,204	4,893
1930.....	676	6,204	5,035
1931.....	607	6,443	5,191
1932.....	705	6,759	5,183
1933.....	712	7,167	5,377
1934.....	720	7,354	5,494
1935.....	734	7,833	5,689
1936.....	732	6,791*	5,697
1937.....	735	6,874*	5,275
1938.....	732	7,228*	.....

* Internships available annually.

TYPES OF INTERNSHIPS

Three types of internships are approved by the American Medical Association—rotating, mixed and straight. The most common is the rotating service, which provides training in medicine, surgery, pediatrics, obstetrics and their related subspecialties together with experience in laboratory and roentgenologic diagnosis. The mixed internship covers more than one of the clinical specialties but does not include all of the divisions listed. A straight internship is one that provides supervised experience in a single department and may be approved if limited to medicine, surgery, pediatrics, obstetrics, obstetrics-gynecology or pathology.

Of the 732 hospitals currently approved for intern training, 660 offer a full rotating service, 27 have mixed assignments, 18 provide straight internships, 17 have both rotating and straight services, 5 have mixed and straight services, 2 have rotating and mixed services, while 3 hospitals furnish all three types.

Since the intern year is mainly a preparation for general practice and a prerequisite for subsequent training in special fields, it is quite logical that most graduates should prefer a full rotating service so as to gain wide experience in relation to the various aspects of modern medicine. Actually 6,226, or 86.1 per cent, of the 7,228 annual internship appointments are now of the rotating type, while 757, or 10.4 per cent, are straight services and 245, or 3.4 per cent, mixed.

LENGTH OF INTERNSHIPS

Reports from 729 intern hospitals in 1939 showed that 578 had internships of twelve months duration, twenty-six offered services of eighteen months, while 84 listed assignments of twenty-four months or over. Six, however, had other schedules ranging from fourteen to twenty-two months and 35 had internships of varying length as, for example, twelve and eighteen months, twelve and twenty-four months or similar combinations.

A study completed in January 1942 shows that 608 of the approved hospitals are now offering twelve months

internships, 17 have services of eighteen months and 71 are in the two year group. Twenty-five hospitals have both twelve and twenty-four months assignments, whereas 2 have combinations of twelve and eighteen months, 1 twelve and fourteen, 1 eighteen and twenty-four, 1 twelve and twenty-five, and 1 twelve, eighteen and twenty-four. Five other hospitals offer schedules of twenty, twenty-one, twenty-two, thirty and thirty-six months respectively.

Already many of the longer internships have been reduced to one year in conformity with the military needs of the country, while others are changing at the beginning of the new intern year in July. A few apparently will retain the two year plan but will no doubt offer a complete internship during the first twelve months, so that adequate training can be assured to those who may be called to military service at the end of the regular intern year.

NECROPSY PERFORMANCE IN INTERN HOSPITALS

The importance of necropsy performance received early recognition, as evidenced by the request for information concerning necropsies in the hospital surveys of the Council in 1913, 1915 and 1918. Moreover, the

TABLE B.—Vacancies in Approved Intern Hospitals

	January 1940		January 1941		January 1942	
	No. of Hos- pitals	No. of Vacan- cies	No. of Hos- pitals	No. of Vacan- cies	No. of Hos- pitals	No. of Vacan- cies
Alabama.....	2	2	3	4	1	1
Arizona.....	..	..	2	4	1	1
Arkansas.....	..	..	1	2	1	4
California.....	7	8	8	37	68	15
Colorado.....	3	4	4	4	2	4
Connecticut.....	2	2	5	8	13	23
Delaware.....	1	1	3	4	..	..
Dist. of Columbia...	..	..	2	2	2	11
Florida.....	1	2	1	4	2	6
Georgia.....	4	6	3	8	5	19
Illinois.....	26	60	30	70	40	137
Indiana.....	5	11	9	23	11	43
Iowa.....	7	16	6	13	8	21
Kansas.....	2	4	2	4	3	6
Kentucky.....	3	9	5	11	5	22
Louisiana.....	2	4	3	8	7	23
Maine.....	1	1	1	2	1	4
Maryland.....	4	6	4	12	11	41
Massachusetts.....	5	7	10	15	22	47
Michigan.....	11	23	12	30	17	63
Minnesota.....	4	8	5	14	7	32
Missouri.....	4	20	11	36	15	55
Montana.....	1	1	2	1	1	1
Nebraska.....	4	5	5	13	5	11
Nevada.....	..	..	1	1	2	5
New Hampshire.....	..	..	1	1	2	62
New Jersey.....	10	19	5	11	20	132
New York.....	15	26	31	63	48	106
North Carolina.....	2	4	1	..	..	..
North Dakota.....	1	1	..	..	21	65
Ohio.....	9	19	17	31	4	10
Oklahoma.....	..	..	1	1	2	2
Oregon.....	..	..	3	4	2	115
Pennsylvania.....	14	21	38	93	23	1
Rhode Island.....	3	4	2	2	1	11
South Carolina.....	1	3	1	4	2	8
Tennessee.....	1	1	3	8	2	19
Texas.....	4	7	7	16	7	5
Utah.....	2	2	3	6	3	4
Vermont.....	..	..	1	2	2	5
Virginia.....	..	..	2	2	3	8
Washington.....	3	5	5	7	7	7
West Virginia.....	1	1	2	3	2	44
Wisconsin.....	12	19	6	9	15	123
Totals.....	176	314	270	615	437	1,123

first schedule of Internship Essentials published in 1919 contained a requirement that necropsy facilities be available and that interns obtain experience in making postmortem examinations under the direction of the hospital pathologist. This matter received further emphasis in the revision of the Essentials in 1925 and,

following a special study of hospital necropsy rates, the Council in 1927 decided that after Jan. 1, 1928 no hospital would be approved for intern training that did not obtain necropsies on at least 10 per cent of the patients dying in the institution, this requirement to be increased to 15 per cent after Jan. 1, 1929.

TABLE C.—Necropsy Performance in Approved Intern Hospitals

Percentage	Number of Hospitals					
	1926	1930	1937	1939	1940	1941
70 or over.....	14	19	27	29	41	42
50-69.....	21	56	68	115	106	120
30-49.....	68	104	263	319	334	290
15-29.....	146	354	348	251	229	256
Below 15.....	329	71	26	7	8	19
Hospitals reporting.....	578	664	732	721	718	727

The results were indeed gratifying, for within one year 586, or 93 per cent, of the approved intern hospitals obtained the required 10 per cent or more of necropsies. Thus only forty-five hospitals failed to meet the minimum requirement in 1928, whereas 222 were below 10 per cent in 1926. Subsequent performance is clearly illustrated in table C. In this the most striking feature is perhaps the rapid decline in the number of hospitals below 15 per cent, while the continuing increase in the higher percentage groups indicates that the hospitals are constantly making every effort to increase their teaching facilities beyond the minimum needs. As a matter of fact the average necropsy rate in the hospitals approved for intern training in 1937 was 34.4 per cent on the basis of 85,050 necropsies and 247,410 deaths, including stillbirths. When stillbirths and coroners' cases not available for teaching were excluded in 1938 the average rate was 37.6 per cent. This was later increased to 37.8 per cent in 1939 and 38.9 per cent in 1940. A slight gain was noted in 1941, when the hospitals approved for intern training reported 211,935 deaths and 82,587 necropsies, indicating an average ratio of 38.97 per cent (see table, page 1066).

In this connection it is of interest to note that the hospitals approved for internships, residencies and fellowships had a total of 250,090 deaths and 96,151 necropsies last year, an average of 38.4 per cent, whereas all other registered hospitals reported 260,068 deaths and 29,489 postmortem examinations, or 11.3 per cent.

DENTAL INTERNSHIPS

The Council on Medical Education and Hospitals does not attempt to exercise supervision over dental internships. However, it may be of interest to note that 152 of the 732 hospitals approved by the American Medical Association for intern and residency training are currently employing 275 dental interns. Further reference to individual hospitals offering dental internships will be included in the next revision of the approved intern list of the Council.

BLOOD AND PLASMA BANKS IN APPROVED HOSPITALS

In January 1942 a survey was made of the facilities for blood and plasma banks in the hospitals approved for internships, residencies and fellowships. Of the 1,070 approved hospitals 462, or 43.2 per cent, reported that such facilities were either in operation or in the process of being established. Some of these institutions also act as manufacturing and distributing centers to

supply blood, plasma or serum to other hospitals in the vicinity. The reports also indicated that many hospitals have commercial products on hand to meet emergency needs.

Reference to table D will show that 206 hospitals maintain both blood and plasma banks, with 17 others in the process of development. In addition there are 171 hospitals operating plasma banks and 33 separate institutions with blood banks. Furthermore it was reported that nine additional blood banks are being established as well as twenty-six plasma banks. Forty-eight other hospitals stated that facilities are available without specifying in what particular form.

RESIDENCIES AND FELLOWSHIPS

Of the 6,358 hospitals now registered by the American Medical Association, 632 have assumed an educational function in accordance with the standards set forth in the Essentials of Approved Residencies and Fellowships. Included in this group are 294 of the 732 institutions which are approved for intern training. From reports received in January 1942 it is apparent

TABLE D.—Blood and Plasma Banks—1942
(In Hospitals Approved for Intern and Residency Training)

State	Number of Hospitals Approved	Blood Bank Only	Plasma Bank Only	Establishing			Total Facilities
				Both Blood and Plasma	Blood Bank	Plasma Bank	
Alabama.....	8	..	2	..	..	..	2
Arizona.....	3	..	..	..	..	..	..
Arkansas.....	4	..	..	1	..	..	1
California.....	53	1	3	7	1	3	15
Colorado.....	16	1	2	..	..	..	3
Connecticut.....	25	3	3	5	..	1	13
Delaware.....	5	..	1	2	..	..	3
District of Columbia.....	10	1	6	7	..	..	14
Florida.....	7	..	2	..	..	..	1
Georgia.....	11	..	2	2	1	..	5
Illinois.....	78	1	17	11	..	1	30
Indiana.....	20	..	4	4	..	1	9
Iowa.....	13	..	1	1	1	..	3
Kansas.....	6	..	2	1	..	..	3
Kentucky.....	12	1	3	3	..	..	7
Louisiana.....	14	..	4	1	..	..	6
Maine.....	5	..	..	1	1	..	2
Maryland.....	24	1	8	8	..	..	17
Massachusetts.....	75	1	6	9	1	..	21
Michigan.....	47	1	4	11	..	4	20
Minnesota.....	23	2	4	1	..	..	7
Mississippi.....	1	..	..	..	..	..	..
Missouri.....	39	..	13	5	..	1	20
Montana.....	2	..	..	1	..	..	1
Nebraska.....	12	..	3	1	..	..	4
New Hampshire.....	5	..	..	..	..	..	..
New Jersey.....	52	4	13	5	1	1	24
New York.....	156	7	19	40	..	3	79
North Carolina.....	11	..	2	5	..	..	7
North Dakota.....	3	..	..	..	..	..	..
Ohio.....	52	1	6	12	1	3	24
Oklahoma.....	7	..	2	4	..	..	6
Oregon.....	7	1	1	1	..	..	4
Pennsylvania.....	103	3	18	26	1	3	53
Rhode Island.....	9	..	2	1	..	..	4
South Carolina.....	5	..	..	3	..	..	3
Tennessee.....	15	..	1	4	1	1	8
Texas.....	31	2	1	4	..	1	8
Utah.....	5	..	..	..	..	..	..
Vermont.....	2	..	..	1	..	..	1
Virginia.....	19	1	1	3	..	1	6
Washington.....	19	..	6	3	..	..	9
West Virginia.....	12	1	4	2	..	2	9
Wisconsin.....	29	..	6	4	..	..	10
Totals.....	1,070	33	171	206	9	26	462

that these hospitals are offering 5,656 internships exclusive of affiliate services, 2,664 approved residencies, 1,887 assistant residencies and 742 fellowships as well as 601 general and other services not yet certified by the Council. Actually, however, there were 5,236 interns on duty at the time of reporting and 5,756

residents, assistant residents and fellows. In this connection it may be of interest to note that in the 1,070 hospitals approved for internships, residencies or both there are now 7,219 interns employed, 2,036 assistant residents, 3,311 residents and 802 fellows.

The number and types of approved residencies are listed in table E. These are usually of one, two or three years duration but may in some instances extend over a period of five or six years. Detailed information concerning individual residencies is published annually in the Educational Number of THE JOURNAL, particularly with reference to the number of patients treated in each service, outpatient visits, deaths, necropsies, the number of residents, assistant residents and fellows employed and the initial monthly stipend.

The inspection and evaluation of residencies in specialties have been carried out by the Council since the publication of the first approved list in 1927. Prior to that time the special hospital assignments were included in the internship list which was officially established in 1914. The procedure involved in the investigation and appraisal of residencies and fellowships was outlined in THE JOURNAL, March 26, 1938, page 978. Subsequently a statement was included in the March 30, 1940 issue, pages 1172-1173, describing the program of collaboration entered into by the Council and the specialty boards in order to secure uniformity in the evaluation of educational opportunities and eliminate unnecessary effort in the inspection of individual hospital assignments. This cooperative plan not only is utilized in connection with the new applications for residency approval but is proving equally helpful in the reappraisal of services certified by the Council prior to the establishment of the American boards.

TABLE E—Classification of Approved Residencies and Fellowships—1942

Specialty	Residencies	Asst. Residencies	Fellowships	Total	No of Hospitals
Anesthesiology	63	40	17	120	18
Cardiology					6
Communicable Diseases	29	7		36	18
Dermatology & Syphilology	32	22	16	70	33
Epilepsy	1			1	1
Fractures	1	2	2	5	4
Gynecology	25	19	1	45	22
Malignant Diseases	47	12	14	73	16
Medicine	416	344	208	968	201
Mixed	143	15		158	63
Neurology	20	29	15	64	27
Neurosurgery	22	11	12	45	22
Obstetrics	69	61		130	58
Obstetrics and Gynecology	132	151	20	303	90
Ophthalmology	90	37	18	145	51
Ophthalmology-Otolaryngology	58	55	5	118	42
Orthopedic Surgery	120	57	32	209	79
Otolaryngology	100	45	15	160	61
Pathology	185	79	59	323	170
	150	186	30	366	117
	2	1	3	6	3
Psychiatry	312	71	31	414	125
Radiology	106	66	35	207	126
Surgery	346	462	165	1,013	251
Thoracic Surgery	13	5	11	29	18
Traumatic Surgery					2
Tuberculosis	179	58	8	245	86
Urology	63	52	22	137	69
Totals	2,664	1,887	742	5,293	*

* Number of hospitals approved for Residencies and Fellowships, 637.

In 1914 there were 428 special internships available in 95 hospitals. These remained practically at the same level during the succeeding ten years, as they totaled only 595 in 1924 although the number of hospitals had increased to 150. The formation of a separate residency list in 1927 gave needed impetus to the program of specialty training, which has recently culminated in the

establishment of certifying boards in fifteen of the divisions of medicine and surgery. Since that time the opportunities for residency training have actually tripled with the extension of hospital assignments from 1,776 to 5,293 and the number of approved institutions from 278 in 1927 to 632 at the present time.

TABLE F.—Interns and Residents in Approved Hospitals—1942

	Hospitals Approved	Assistant			
		Interns	Residents	Residents	Fellows
Alabama	8	38	..	28	..
Arizona	3	9	..	3	..
Arkansas	4	16	6	7	..
California	55	403	139	208	9
Colorado	16	60	5	40	6
Connecticut	25	159	23	51	5
Delaware	5	25	1	1	..
District of Columbia	19	134	52	69	15
Florida	7	40	9	6	..
Georgia	11	76	52	33	3
Illinois	76	467	77	327	65
Indiana	20	111	12	64	7
Iowa	13	41	34	27	..
Kansas	8	34	10	17	2
Kentucky	12	40	33	25	..
Louisiana	14	207	101	56	1
Maine	5	21	1	6	..
Maryland	24	233	145	79	1
Massachusetts	75	572	90	194	63
Michigan	47	240	175	204	43
Minnesota	23	139		37	212
Mississippi	1				
Missouri	39	238	102	103	10
Montana	2	5	..	..	..
Nebraska	12	45	..	23	1
New Hampshire	5	10	1	3	..
New Jersey	52	333	22	92	1
New York	158	1,766	477	785	100
North Carolina	11	70	44	25	1
North Dakota	3	2		3	..
Ohio	52	350	169	202	61
Oklahoma	7	35	5	22	1
Oregon	7	53	9	18	1
Pennsylvania	103	676	29	273	40
Rhode Island	9	46	1	20	..
South Carolina	5	28	7	6	4
Tennessee	15	126	46	38	7
Texas	31	154	45	75	1
Utah	5	27		3	..
Vermont	2	4		3	2
Virginia	19	114	31	33	3
Washington	19	90	6	14	..
West Virginia	12	31	12	18	..
Wisconsin	29	113	65	67	1
Totals	1,070	7,219	2,036	3,311	802

The rate of growth has been fairly uniform throughout, although considerable acceleration has occurred in recent years in view of the continuing emphasis on specialization and the certifying activities of the American boards. In view of military needs it can be expected that residencies in specialties will be greatly curtailed during the coming year. Efforts are being made, however, by the Council on Medical Education and Hospitals and the Advisory Board for Medical Specialties to develop a plan whereby a certain percentage of recent graduates may be given an opportunity to continue their training beyond the period of a one year internship. To some extent the residency training program will also be maintained through the employment of physicians ineligible for military service who may wish to secure additional hospital experience in the specialties. While it is apparent that much of the residency work in civilian hospitals will necessarily be discontinued one does not hesitate to predict that American hospitals which are already well advanced in the field of graduate training will again be ready to resume their educational function when the present emergency is over.

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,358 hospitals, sanatoriums and related institutions that are located in the United States and 248 in Alaska, Canal Zone, Hawaii, Philippines, Puerto Rico and Virgin Islands. The list for each state is presented in two groups: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include infirmaries, nursing homes and other institutions designed to give certain medical and nursing care in an ethical and acceptable manner, without giving a full hospital service.

Registration of hospitals is governed by the Essentials of a Registered Hospital, adopted by the House of Delegates in 1928 and revised in 1939.

Registration is a basic recognition, extended to all the hospitals and related institutions in the following list, concerning which we have no evidence of irregular or unsafe practices. Approval is designation of certain registered institutions by the Council on Medical Education and Hospitals for internships, residencies and fellowships; or by the American College of Surgeons as unconditionally meeting its minimum standards.

KEY TO SYMBOLS AND ABBREVIATIONS

- * Approved for training interns by the Council on Medical Education and Hospitals. List with detailed information is sent on request.

+ Approved for residencies or fellowships. List with detailed information is sent on request.
- ▲ Approved by American College of Surgeons as meeting unconditionally its minimum standards.

◊ School of nursing accredited by state board of nurse examiners.

◉ Affiliated for nurse training on state accredited basis.

† Figures for "average census" and "admissions" are exclusive of newborn infants.

The column headed "Type of Service" tells what diseases are treated in each institution:

Card	Cardiac	ENT	Eye, ear, nose and throat	Iso	Isolation	N&M	Nervous and mental
Chil	Children	Gen	General	Mat	Maternity	Orth	Orthopedic
Cbr	Chronic	Incur	Incurable	MatCh	Maternity and children	SkCa	Skin and cancer
Conv	Convalescent and rest	Indus	Industrial	MeDe	Mentally deficient	TB	Tuberculosis
Drug	Drug and alcoholic	Inst	Institutional	Ment	Mental	Ven	Venereal
Epil	Epileptic						

The column headed "Control" indicates control, or auspices under which the institution is conducted:

GOVERNMENTAL				NONPROFIT ORGANIZATIONS		PROPRIETARY	
Fed	Federal	State		Church		Indiv	Individual
IA	Indian Affairs	City		NPAssn	Nonprofit Association	Part	Partnership
Army	United States Army	County				Corp	Corporation (unrestricted as to profit)
Navy	United States Navy	City-County					
USPHS	United States Public Health Service	CyCo					
Vet	Veterans Administration Facility						

The accompanying list omits additions to hospital facilities that may have been made by certain departments of the Federal Government since the publication of the last previous issue March 15, 1941.

Corrections were made in the list to the time of going to press. Totals of the list, therefore, may vary from totals in Tables 1 and 2 which were necessarily compiled earlier.

ALABAMA							ALABAMA—Continued						
Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births
Alabama City, 8,544—Etowah							Brewton, 3,323—Escambia						
Etowah County Tuberculosis Sanatorium	TB	County	22	20	..	48	Brewton Memorial Hospital	Gen	Indiv	20	...	3	Reorganized
Albertville, 3,651—Marshall							Clanton, 3,982—Chilton						
Sand Mountain Infirmiry..	Gen	Indiv	24	4	2	197	Central Alabama Hospital.	Gen	NPAssn	28	15	3	24 606
Alexander City, 6,640—Tallapoosa							Cullman, 5,074—Cullman						
Russell Hospital	Gen	Corp	54	12	4	89 417	Cullman Hospital	Gen	CyCo	50	16	10	141 1,033
Altoona, 965—Etowah							Decatur, 16,604—Morgan						
Klein Hospital	Gen	Indiv	27	12	3	44 409	Benevolent Society Hosp.◊.	Gen	NPAssn	50	28	4	102 736
Anniston, 25,523—Calhoun							Dothan, 17,194—Houston						
Garner Hospital◊◊	Gen	City	68	40	7	229 1,982	Dr. M. S. Davie's Private						
Susie Parker Stringfellow Memorial Hospital	TB	NPAssn	15	14	..	35	Hospital	Gen	Indiv	20	19	4	24 923
Athens, 4,342—Limestone							Fraser-Ellis Hospital◊◊	Gen	Indiv	60	52	6	108 1,725
Limestone County Hospital.	Gen	NPAssn	10	4	2	45 220	Moody Hospital◊◊	Gen	Corp	66	37	9	126 1,269
Atmore, 3,200—Escambia							East Tallassee, 3,000—Tallapoosa						
Atmore General Hospital...	Gen	NPAssn	26	7	3	55 591	Community Hospital	Gen	NPAssn	28	12	9	169 866
Auburn, 4,652—Lee							Enterprise, 4,353—Coffee						
John Hodges Drake Hosp..	Gen	State	70	17	4	46 1,241	Gibson Hospital	Gen	NPAssn	44	10	4	45 749
Bellamy, 317—Sumter							Eufaula, 6,260—Barbour						
Bellamy Hospital	Gen	Indiv	16	5	2	21 231	Britt Infirmiry	Gen	Indiv	50	22	6	43 651
Bessemer, 22,826—Jefferson							Salter Hospital◊	Gen	Indiv	52	26	8	104 1,203
Bessemer General Hosp.◊◊	Gen	Corp	75	31	5	66 1,226	Fairfield, 11,703—Jefferson						
Jefferson Hospital	Gen	County	545	108	75	631 4,177	Employees' Hospital of the						
Jefferson Tuberculosis Sanatorium	TB	County	150	108	..	358	Tennessee Coal, Iron and						
Miss Quinn's Nursing Home	Conv	Part	10	8	..	310	Railroad Company◊◊◊	Gen	NPAssn	291	207	36	1,213 8,782
Norwood Hospital◊◊◊	Gen	Church	226	118	19	611 7,038	Fayette, 2,068—Fayette						
St. Vincent's Hospital◊◊	Gen	Church	125	112	6	162 3,867	McNase and Robertson						
South Highlands Infirmiry◊	Gen	Corp	140	128	25	582 4,786	Hospital	Gen	Part	20	9	4	35 323
335 Crippled Children's Clinic	Orth	NPAssn	50	36	..	333	Flint (Decatur P.O.), 134—Morgan						

Key to symbols and abbreviations is on this page, preceding the tabulation

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Fort McClellan, —Calhoun Station Hospital	Gen	Army	200	165	2	22	5,449
Gadsden, 36,975—Etowah							
Forrest General Hospital	Gen	Indiv	85	14	10	60	813
Holy Name of Jesus Hospital	Gen	Church	96	66	18	432	5,412
Greensboro, 2,034—Haile							
Greensboro Hospital	Gen	Part	16	2	2	19	112
Greenville, 5,075—Butler							
Spehr Hospital	Gen	Indiv	46	7	6	47	480
Stabler Infirmary	Gen	Part	40	16	6	63	781
Guntersville, 4,395—Marshall							
Guntersville City Hospital ..	Gen	City	29	...	5	Estab. 1941	
Huntsville, 13,050—Madison							
Huntsville Hospital	Gen	NPAasn	70	32	6	144	1,563
Jackson, 2,039—Clarke							
South Alabama Infirmary ..	Gen	Corp	16	6	2	27	291
Jasper, 6,847—Walker							
Peoples Hospital	Gen	County	70	30	8	139	1,435
Walker County Hospital	Gen	Corp	55	25	6	49	1,063
Lafayette, 2,135—Chambers							
Batson Memorial Sanatorium	TB	County	52	48	..	...	131
Mobile, 78,720—Mobile							
Ailea Memorial Home	Mat	Church	24	11	23	481	508
City Hospital	Gen	City	127	104	18	574	3,868
Mobile County Tuberculosis Sanatorium	TB	NPAasn	60	37	..	...	50
Mobile Infirmary	Gen	NPAasn	120	87	10	263	3,177
Providence Hospital	Gen	Church	88	73	20	404	3,501
U. S. Marine Hospital	Gen	USPHS	191	143	..	...	2,103
Montgomery, 78,034—Montgomery							
Flitts Hill Hospital	Gen	Indiv	30	20	7	159	1,099
Fraternal Hospital	Gen	Indiv	55	23	10	106	1,875
Hubbard Hospital	Gen	Indiv	55	35	12	261	2,021
Kilby Prison Hospital	Inst	State	125	111	..	...	1,945
Montgomery Tuberculosis Sanatorium	TB	NPAasn	115	106	..	...	218
St. Margaret's Hospital	Gen	Church	123	96	21	658	4,755
Station Hospital	Gen	Army	50	50	4	28	1,911
Veterans Admin. Facility	Gen	Vet	203	172	..	...	1,894
Mt. Vernon, 610—Mobile							
Searey Hospital	Ment	State	1,050	1,038	..	...	443
Opelika, 8,487—Lee							
Opelika Infirmary	Gen	Indiv	25	11	8	139	644
Pell City, 900—St. Clair							
Pell City Infirmary	Gen	Indiv	19	5	1	60	490
Prattville, 2,664—Antauga							
Prattville General Hospital	Gen	Indiv	20	9	4	64	260
Repton, 305—Conceh							
Carter Hospital	Gen	Indiv	10	7	3	...	402
Roanoke, 4,163—Randolph							
Knight Sanatorium	Gen	Indiv	32	15	3	31	487
Russellville, 3,510—Franklin							
Russellville Hospital	Gen	Indiv	30	15	3	54	1,038
Scottsboro, 2,834—Jackson							
Hodges Hospital	Gen	Indiv	20	6	2	27	348
Tri-Counties Tuberculosis Sanatorium	TB	Counties	20	18	..	...	40
Selma, 19,834—Dallas							
Burwell Infirmary	Gen	Part	25	15	2	8	431
Goldsbey King Memorial Hospital	Gen	NPAasn	72	47	10	30	1,429
Good Samaritan Hospital ..	Unit of Selma Baptist Hospital	NPAasn	50	27	8	196	1,699
Selma Baptist Hospital	Gen	Corp	35	23	6	86	1,275
Vaughan Memorial Hosp. ..	Gen	Corp	35	23	6	86	1,275
Shefield, 7,933—Colbert							
Colbert County Hospital ..	Gen	City	75	28	12	248	2,079
Sylacauga, 6,269—Talladega							
Drummond Fraser Hospital and Sylacauga Infirmary	Gen	Corp	71	46	18	249	1,831
T	Gen	NPAasn	100	55	9	319	4,234
T	Inst	NPAasn	18	1	..	...	130
Troy, 7,055—Pike							
Beard Memorial Hospital ..	Gen	Indiv	35	16	6	70	890
Edge Hospital	Gen	Indiv	35	18	3	42	953
T	Ment	State	4,220	4,187	..	...	1,405
T	Gen	NPAasn	78	52	10	540	3,285
T	Gen	Church	55	25	5	63	896
T	Vet	Vet	558	250	..	...	1,151
Tuskegee, 3,937—Macon							
Veterans Admin. Facility	Ment	Vet	1,498	1,450	..	...	2,232
Tuskegee Institute, 375—Macon							
John Albion Andrew Memorial Hospital	Gen	NPAasn	125	53	0	157	1,082
Wetumpka, 3,059—Elmore							
Wetumpka General Hosp. ..	Gen	Corp	37	13	4	96	651
York, 1,783—Sumter							
Hill Hospital	Gen	Indiv	20	6	2	40	454

ARIZONA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Ajo, 1,100—Pima							
Phelps Dodge Hospital	Gen	Corp	33	13	5	130	825
Bisbee, 5,853—Cochise							
Copper Queen Hospital	Gen	NPAasn	42	31	8	261	1,548
Cibola, 65—Apache							
Chino General Hospital	Gen	IA	23	17	3	46	738
Douglas, 8,623—Cochise							
Cochise County Hospital ..	Gen	County	95	84	6	72	889
Flagstaff, 5,080—Coconino							
Flagstaff Hospital	Gen	NPAasn	25	8	6	75	510
Merely Hospital	Gen	Indiv	14	5	5	43	274
Fort Defiance, 600—Apache							
Fort Defiance Sanatorium ..	Unit of Navajo Medical Center Hospital and Sanatorium						
Navajo Medical Center Hospital and Sanatorium	Gen	IA	173	98	14	116	2,071
Fort Huachuca, 1,500—Cochise	Gen	IA	100	93	..	...	163
Station Hospital	Gen	Army	48	31	1	12	802
Ganado, 150—Apache							
Sage Memorial Hospital	Gen	Church	150	92	15	133	1,605
Globe, 6,141—Gila							
Gila County Hospital	Gen	County	50	30	6	82	630
Holbrook, 1,184—Navajo							
Park-Navajo Private Hospital	Gen	Indiv	9	4	3	46	141
Keams Canyon, 150—Navajo	Gen	NPAasn	52	35	4	114	1,146
Hopi General Hospital	Gen	IA	49	31	7	51	930
Kingman, 2,200—Mohave							
Mohave General Hospital ..	Gen	County	30	21	5	110	709
Leupp, 200—Coconino							
Leupp Indian Hospital	Gen	IA	28	20	3	23	560
McNary, 65—Apache							
McNary Hospital	Gen	NPAasn	12	2	1	22	115
Mesa, 7,224—Maricopa							
South Side District Hosp. ..	Gen	NPAasn	50	50	8	282	2,011
Miami, 4,722—Gila							
Miami-Inspiration Hospital	Gen	NPAasn	40	22	7	163	771
Morenci, 1,500—Greenlee							
Phelps-Dodge Hospital	Gen	NPAasn	36	30	8	350	1,353
Nogales, 5,135—Santa Cruz							
St. Joseph's Hospital	Gen	Church	30	10	7	46	300
Oracle, 200—Pinal							
La Casa del Encanto	N&M	Indiv	8	4	..	...	10
Parker, 200—Yuma							
Colorado River Indian Agency Hospital	Gen	IA	41	14	4	31	369
Phoenix, 65,414—Maricopa							
Arizona State Hospital	Ment	State	1,015	923	..	...	511
Good Samaritan Hosp.	Gen	Church	178	118	18	551	4,829
Phoenix Indian Hospital ..	Gen	IA	68	59	10	100	1,153
Phoenix Indian Sanatorium	TB	IA	130	89	..	...	110
St. Joseph's Hospital	Gen	Church	206	157	40	1,601	0,890
St. Luke's Home	TB	Church	57	27	..	...	93
Prescott, 6,016—Yavapai							
Pamsetgnaf Sanatorium ..	TB	Indiv	35	10	..	...	90
Yavapai County Hospital ..	InstGen	County	68	45	6	103	937
Ray, 1,100—Pinal							
Ray Hospital	Gen	NPAasn	20	10	6	63	399
Sacaton, 315—Pinal							
Pima Indian Hospital	Gen	IA	36	26	6	89	945
Safford, 2,266—Graham							
Morris-Squibb Hospital	Gen	NPAasn	31	10	5	58	448
San Carlos, 100—Gila							
San Carlos Indian Hosp. ..	Gen	IA	46	27	6	72	942
Sells, 400—Pima							
Indian Oasis Hospital	Gen	IA	44	25	5	28	567
Tempe, 2,906—Maricopa							
State Welfare Sanatorium ..	TB	State	63	91	..	...	129
Tuba City, 150—Coconino							
Tuba City Hospital	Gen	IA	43	32	6	30	1,002
Tucson, 36,818—Pima							
Anson Rest Home	TB	Part	30	23	..	...	47
Barfield Sanatorium	TB	Indiv	22	9	..	...	42
Comstock Children's Hosp. ..	TB	NPAasn	35	28	..	...	56
Desert Sanatorium of Southern Arizona	Gen	NPAasn	91	33	5	19	453
Pima County General Hospital ..	Gen	County	94	96	10	18	1,307
St. Luke's in the Desert Sanatorium	TB	Church	35	20	..	...	25
St. Mary's Hospital and Sanatorium	Gen	Church	155	100	25	500	4,460
San Xavier Indian Sanatorium	TB	IA	46	40	..	...	43
Southern Pacific Sanatorium	TB	NPAasn	62	47	..	...	43
Veterans Admin. Facility ..	TB	Vet	239	156	..	...	533
Whipple, —Yavapai							
Veterans Admin. Facility ..	Gen	Vet	313	152	..	...	1,243
Whiteriver, 300—Navajo							
Fort Apache Agency Hospital ..	Gen	IA	64	31	4	21	725
.. .. .	Gen	NPAasn	21	10	2	47	450
.. .. .	Gen	Indiv	8	3	3	28	173

Key to symbols and abbreviations is on page 1071

ARIZONA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Winslow, 4,577—Navajo Winslow Indian Sanatorium TB	IA		55	51	..	...	97
Yuma, 5,225—Yuma Fort Yuma Indian Hospital Gen	IA		20	13	8	18	433
Yuma County General Hospital	Gen	County	72	51	12	278	1,738
Related Institutions							
Kayenta, 40—Navajo Kayenta Indian Sanatorium	TB	IA	54	42	..	...	91
Phoenix, 65,414—Maricopa Eva Harris Maternity Home	Mat	Indiv	15	8	15	375	375
Tucson, 36,818—Pima Arizona State Elks Association Hospital	TB	NPAasn	25	12	..	...	20
Reardon Sanatorium	TB	Indiv	12	7	..	...	19
Valentine, 110—Mohave Truxton Canyon Hospital. Gen	IA		15	9	5	23	189

ARKANSAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Alexander, 134—Pulaski McRae Memorial Sanatorium	TB	State	147	102	..	...	112
Arkadelphia, 5,078—Clark Townsend Hospital	Gen	Indiv	14	4	4	31	198
Batesville, 5,267—Independence Craig Hospital	Gen	Indiv	12	8	3	19	608
Dr. Gray's Hospital	Gen	Indiv	55	15	6	30	623
Benton, 3,502—Saline Blakely Hospital	Gen	Indiv	15	No data supplied			
State Hospital, Benton Division	Unit of State Hospital,	Little Rock					
Blytheville, 10,632—Mississippi Blytheville City Hospital. Gen	Indiv		40	15	6	50	902
Walls Hospital	Gen	Indiv	34	20	6	102	1,660
Camden, 8,975—Ouachita Camden Hospital	Gen	NPAasn	40	16	9	276	1,046
Charleston, 958—Franklin Bollinger Hospital	Gen	Indiv	12	3	..	53	129
Clarksville, 3,118—Johnson St. Hildegard's Municipal Hospital	Gen	Church	26	14	5	43	896
Conway, 5,762—Faulkner Conway Memorial Hosp.	Gen	NPAasn	30	9	4	72	562
Crosscut, 4,891—Ashley Crossett Hospital	Gen	NPAasn	46	17	10	128	1,150
De Queen, 3,035—Sevier Archer Hospital	Gen	Indiv	22	5	1	17	231
De Queen General Hospital. Gen	Part		18	8	2	24	504
Dermott, 3,063—Chicot Dermott Municipal Hospital Gen	Church		30	9	3	32	309
Dumas, 2,323—Desha Dumas Hospital	Gen	Corp	22	5	4	83	323
El Dorado, 15,858—Union Henry C. Rosamond Memorial Hospital	Gen	Part	24	6	8	58	278
Warner Brown Hospital.	Gen	Church	79	54	10	387	2,478
Fayetteville, 8,212—Washington Fayetteville City Hospital. Gen	City		60	33	10	248	1,487
Veterans Admin. Facility.	Gen	Vet	253	229	..	...	2,245
Fort Smith, 36,584—Sebastian Arkansas Tuberculosis Sanatorium	Unit of Arkansas Tuberculosis Sanatorium,	State Sanatorium					
St. Edward's Mercy Hospital.	Gen	Church	100	102	16	572	3,657
Sparks' Memorial Hosp.	Gen	NPAasn	100	54	15	283	2,784
Itasca, 171—Saline State Hospital, Benton Division	Unit of State Hospital,	Little Rock					
Heber Springs, 1,656—Clebume Estelle Hospital	Gen	Part	22	14	5	140	701
Helena, 8,546—Phillips Helena Hospital	Gen	NPAasn	60	31	8	138	1,337
Hope, 7,476—Hempstead Josephine Hospital	Gen	Indiv	22	9	4	39	327
Julia Chester Hospital.	Gen	NPAasn	35	16	6	46	473
Hot Springs National Park, 21,370—Garland Army and Navy General Hospital	Gen	Army	412	369	3	10	3,098
Leo N. Levi Memorial Hospital.	Gen	NPAasn	75	53	5	82	873
Ozark Sanatorium	Gen	Corp	60	13	4	28	386
St. Joseph's Infirmary.	Gen	Church	150	81	8	117	2,475
U. S. Public Health Service Medical Center Infirmary. Ven	USPHS		90	52	4	18	508
Jonesboro, 11,729—Craighead St. Bernard's Hospital.	Gen	Church	100	73	10	238	2,566
Lake Village, 2,045—Chicot Lake Village Infirmary.	Gen	Part	37	15	5	65	894

ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Little Rock, 88,039—Pulaski Arkansas Children's Home and Hospital.	Chil	NPAasn	83	53	..	...	1,430
Baptist State Hospital.	Gen	Church	340	157	25	494	5,854
Florence Crittenton Home. Mat	Gen	NPAasn	33	2	12	19	32
Granite Mountain Hospital Gen	Indiv		20	4	2	24	184
Missouri Pacific Hospital.	Indus	NPAasn	125	45	..	...	1,582
Pulaski County Hospital.	Gen	County	177	180	4	151	1,045
St. Vincent's Infirmary.	Gen	Church	28	23	..	...	52
State Hospital	Gen	State	183	153	60	926	6,158
United Friends of America Hospital	Gen	NPAasn	25	15	2	8	...
University Hospital.	Gen	State	225	142	20	375	3,712
Magnolia, 4,326—Columbia City Hospital	Gen	City	21	9	4	75	456
Monticello, 6,650—Drew Mack Wilson Hospital.	Gen	Indiv	30	12	2	29	600
Morrilton, 4,008—Conway St. Anthony's Hospital.	Gen	Church	30	24	4	89	743
Newport, 4,321—Jackson Dr. Gray's Hospital.	Gen	Indiv	20	8	2	28	317
Paragould, 7,079—Greene Dickson Memorial Sanatorium	Gen	Corp	35	13	6	60	775
Pine Bluff, 21,290—Jefferson Davis Hospital.	Gen	Church	60	30	8	312	1,559
Prescott, 3,177—Nevada Cora Donnell Hospital.	Gen	Indiv	30	11	5	46	592
Russellville, 5,927—Pope Haney Eye, Ear, Nose and Throat Hospital	ENT	Indiv	8	2	..	...	201
St. Mary's Hospital.	Gen	Indiv	60	40	12	120	1,592
Searcy, 3,670—White Hawkins Clinic Hospital.	Gen	Indiv	26	17	4	60	411
Wakenight Hospital	Gen	Indiv	50	28	5	78	1,434
Siloam Springs, 2,764—Benton John Brown University Hospital	Gen	NPAasn	25	9	4	47	624
State Sanatorium, 300—Logan Arkansas Tuberculosis Sanatorium.	TB	State	1,155	1,158	..	...	1,405
Texarkana, 11,821—Miller Michael Meagher Memorial Hospital.	Gen	Church	40	33	10	308	2,897
St. Louis Southwestern Hospital.	Indus	NPAasn	150	78	..	...	3,175
Veterans Administration Facility, —Pulaski Veterans Admin. Facility.	Ment	Vet	1,360	1,170	..	...	533
Warren, 2,516—Bradley Hunt Hospital	Gen	Indiv	16	4	5	28	193

Related Institutions

Little Rock, 88,039—Pulaski Arkansas School for the Blind	Inst	State	22	4	164
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CALIFORNIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Agnew, 300—Santa Clara Agnews State Hospital.	Ment	State	3,709	3,540	..	...	941
Ahwahnee, 50—Madera Ahwahnee Sanatorium	TB	Counties	128	96	..	...	142
Alameda, 36,256—Alameda Alameda Hospital.	Gen	NPAasn	85	54	21	369	2,650
Albany, 11,493—Alameda Albany Hospital	Gen	Indiv	30	23	16	446	1,259
Alcatraz, —San Francisco U. S. Penitentiary Hospital.	Inst	USPHS	30	...	..	...	...
Alhambra, 38,935—Los Angeles Alhambra Hospital.	Gen	Corp	40	38	12	442	2,117
Angel Island, 478—Marin Station Hospital	Gen	Army	70	41	..	...	1,584
Antioch, 5,106—Contra Costa Antioch Hospital	Gen	Indiv	20	8	8	223	853
See Riverside	Gen	Church	23	15	5	63	660
Atwater, 1,235—Merced Bloss Memorial Hospital.	Unit of Merced General Hospital,	Merced					
Auberry, 100—Fresno Wish-I-ah Sanatorium	TB	County	100	86	..	...	182
Auburn, 4,013—Placer Highlands General Hospital and Sanatorium	Gen	Indiv	26	10	5	134	511
Placer County Hospital.	InstGen	County	126	104	5	60	769
Bakersfield, 22,252—Kern Mercy Hospital.	Gen	Church	112	80	20	409	3,624
Banning, 3,574—Riverside Banning Hospital and Sanatorium	GenTb	Indiv	25	4	2	3	38
Southern Sierras Sanatorium	TB	Indiv	35	14	..	...	10

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bell, 11,264—Los Angeles							
Bell Mission Hospital.....	Gen	Corp	30	26	13	540	1,298
Belmont, 1,229—San Mateo							
Alexander Sanitarium.....	N&M	Corp	75	53	..	...	103
California Sanitarium.....	TB	Corp	100	86	..	...	281
Twin Pines Sanitarium.....	N&M	Corp	38	34	..	...	77
Berkeley, 85,547—Alameda							
Alta Bates Hospital.....	Gen	Corp	100	79	36	633	3,767
Berkeley Hospital.....	Gen	NPAasn	100	40	13	263	1,758
Ernest V. Cowell Memorial Hospital.....	Gen	State	100	76	1	2	3,223
Blythe, 2,355—Riverside							
Riverside County Branch Hospital.....	Gen	County	17	6	11	93	364
Brawley, 11,718—Imperial							
Brawley Community Hosp. Gen	Indiv		20	9	14	215	617
Burbank, 34,337—Los Angeles							
Burbank Hospital.....	Gen	Indiv	36	25	12	249	907
Camarillo, 300—Ventura							
Camarillo State Hospital..	Ment	State	3,058	2,663	..	...	1,404
Carmel, 2,837—Monterey							
Peninsula Community Hospital.....	Gen	NPAasn	37	26	10	326	1,320
Chico, 9,287—Butte							
Enloe Hospital.....	Gen	Indiv	42	30	14	256	1,298
Colfax, 724—Placer							
Bushnell Sanitarium.....	Unit of Colfax School for the Tuberculous						
Colfax Hospital.....	Unit of Colfax School for the Tuberculous						
Colfax School for the Tuberculous	TB	Indiv	54	18	..	...	45
Compton, 16,198—Los Angeles							
Compton Sanitarium+AO.....	N&M	Corp	120	63	..	...	573
Las Campanas Hospital.....	Gen	Corp	33	26	12	333	1,162
Concord, 1,373—Contra Costa							
Concord Hospital.....	Gen	Indiv	40	15	5	187	865
Coronado, 6,932—San Diego							
Coronado Hospital.....	Gen	Indiv	14	7	5	70	366
Covina, 3,049—Los Angeles							
Covina Hospital.....	Gen	Part	50	29	10	151	1,123
Crescent City, 1,363—Del Norte							
Knapp Hospital.....	Gen	NPAasn	25	8	5	73	478
Culver City, 8,976—Los Angeles							
Community Hospital.....	Gen	Indiv	11	9	6	105	550
Delano, 4,573—Kern							
Delano Hospital.....	Gen	Indiv	17	8	7	66	413
Dinuba, 3,790—Tulare							
Alta District Hospital.....	Gen	Part	17	6	4	120	320
Dos Palos, 978—Merced							
Dos Palos Community Hospital.....	Gen	Indiv	16	8	3	135	636
Downey, 15,000—Los Angeles							
Downey Community Hosp. Gen	NPAasn		30	15	8	149	958
Duarte, 2,000—Los Angeles							
Los Angeles Sanatorium+..	TB	NPAasn	200	174	..	...	123
Dunsinmull, 2,359—Siskiyou							
Dunsinmull Hospital and Sanitarium.....	Gen	Part	17	4	6	53	332
El Centro, 10,017—Imperial							
Imperial County Charity Hospital.....	Gen	County	97	77	4	111	1,261
Eldridge, 16—Sonoma							
Sonoma State Home.....	MeDe	State	3,045	3,017	..	...	400
El Monte, 4,746—Los Angeles							
Ruth Home.....	VenMat	NPAasn	135	50	15	6	76
Eureka, 17,055—Humboldt							
General Hospital.....	Gen	Part	42	24	8	144	2,048
Humboldt County Hospital Gen	County		106	70	6	85	1,880
Humboldt County School for the Tuberculous.....	TB	County	65	48	..	...	96
St. Joseph Hospital.....	Gen	Church	65	33	13	212	1,594
Fairfield, 1,312—Solano							
Solano County Hospital... InstGen	County		110	94	6	96	1,034
Fort Bragg, 3,235—Mendocino							
Redwood Coast Hospital.....	Gen	Corp	27	15	8	96	576
French Camp, 248—San Joaquin							
San Joaquin General Hospital.....	Gen	County	525	523	25	891	10,973
Fresno, 60,685—Fresno							
Burnett Sanitarium.....	Gen	Corp	134	95	32	908	4,284
General Hospital of Fresno County+AO.....	Gen	County	405	390	30	1,117	7,855
St. Agnes Hospital.....	Gen	Church	72	50	18	446	2,087
Fullerton, 10,442—Orange							
Fullerton Hospital.....	Gen	Church	35	20	10	228	951
Gilroy, 3,615—Santa Clara							
Wheeler Hospital.....	Gen	NPAasn	25	13	8	119	617
Glendale, 82,532—Los Angeles							
Glendale Sanitarium and Hospital+AO.....	Gen	Church	200	170	25	814	5,323
Physicians and Surgeons Hospital.....	Gen	NPAasn	70	67	18	879	3,445
Grass Valley, 5,701—Nevada							
W. C. Jones Memorial Hospital.....	Gen	Indiv	30	16	4	49	533
Gen	Army		66	23	..	...	1,005
Gen	Corp		26	21	8	169	997
Gen	County		165	137	12	236	2,446
Gen	Church		24	16	7	300	600

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hawthorne, 8,263—Los Angeles							
Hawthorne Hospital.....	Gen	Part	26	15	15	335	976
Hayward, 6,738—Alameda							
Hayward Hospital.....	Gen	Indiv	20	12	5	100	583
Healdsburg, 2,507—Sonoma							
Healdsburg General Hosp..	Gen	NPAasn	20	7	6	80	1,100
Hermosa Beach, 7,197—Los Angeles							
South Bay Community Hospital.....	Gen	NPAasn	20	8	7	45	261
Hollister, 3,881—San Benito							
Hazel Hawkins Memorial Hospital.....	Gen	NPAasn	18	11	4	120	745
San Benito County Hosp.. InstGen	County		40	38	4	11	191
Hondo, 3,150—Los Angeles							
Rancho Los Amigos..... InstMent	County		2,891	2,705	..	...	2,203
Hoopa, 140—Humboldt							
Hoopa Valley Indian Hosp. Gen	IA		44	12	5	51	432
Huntington Park, 28,648—Los Angeles							
Mission Hospital.....	Gen	Corp	31	31	10	437	1,473
Imola, 20—Napa							
Napa State Hospital.....	Ment	State	3,848	3,490	..	...	819
Indio, 2,296—Riverside							
Casita Hospital.....	Gen	Indiv	26	13	7	160	834
Conchella Valley Hospital. Gen	Part		20	14	6	115	780
Inglewood, 30,114—Los Angeles							
Centinela Hospital.....	Gen	Indiv	42	39	10	354	1,457
Inglewood Woman's Hosp. Mat	Part		30	16	27	450	445
St. Erne Sanitarium.....	N&M	Indiv	200	105	..	...	266
Keene, 164—Kern							
Stony Brook Retreat.....	TB	County	108	98	..	...	80
King City, 1,768—Monterey							
Community Hospital.....	Gen	Indiv	15	9	4	48	472
Kingsburg, 1,504—Fresno							
Kingsburg Sanitarium.....	Gen	Indiv	12	6	4	33	380
La Crescenta, 3,000—Los Angeles							
Hillcrest Sanitarium.....	TB	Corp	125	89	..	...	134
La Jolla, —San Diego							
Scripps Memorial Hospital.....	Gen	NPAasn	44	32	6	102	1,217
Scripps Metabolic Clinic....	Metab	NPAasn	33	26	..	...	1,444
La Vina, 35—Los Angeles							
La Vina Sanatorium.....	TB	NPAasn	50	49	..	...	40
Lindsay, 4,397—Tulare							
Lindsay Municipal Hospital Gen	City		23	...	5	Estab. 1941	
Livermore, 2,635—Alameda							
Arroyo Del Valle Sana- torium+AO.....	TB	County	272	250	..	...	232
Livermore Sanitarium.....	N&M	Corp	140	97	..	...	407
St. Paul's Hospital.....	Gen	Indiv	23	12	6	110	401
Veterans Admin. Facility.....	TB	Vet	339	307	..	...	403
Lodi, 11,079—San Joaquin							
Buchanan Hospital.....	Gen	Indiv	35	18	9	166	931
Mason Hospital.....	Gen	Indiv	25	15	5	61	574
Loma Linda, 2,500—San Bernardino							
Loma Linda Sanitarium and Hospital+AO.....	Gen	Church	122	88	12	238	3,233
Long Beach, 164,271—Los Angeles							
Bixby Knolls Maternity Hospital.....	Mat	Part	24	15	24	520	523
Harriman Jones Clinic and Hospital.....	Gen	Indiv	40	17	8	131	866
Long Beach Community Hospital.....	Gen	NPAasn	100	73	20	543	3,715
St. Mary's Long Beach Hospital.....	Gen	Church	75	73	18	874	3,182
Seaside Memorial Hosp.....	Gen	NPAasn	214	132	40	593	6,747
Los Angeles, 1,504,277—Los Angeles							
Los Angeles County Jail	TB	NPAasn	100	98	..	...	72
Los Angeles County Psych- opathic Hospital.....	Gen	Mat	28	22	30	750	801
California Hospital+AO.....	Chil	NPAasn	30	7	..	...	519
Cedars of Lebanon Hos- pital+AO.....	Gen	Church	261	219	32	1,579	9,784
Children's Hospital+AO.....	Gen	NPAasn	258	240	40	1,143	8,831
East Los Angeles Hospital, Gen	Chil	NPAasn	200	144	..	...	4,971
Ex-Patients Home of the Jewish Consumptive Relief Association.....	TB	NPAasn	70	67	..	...	65
Eye and Ear Hospital.....	ENT	Corp	21	2	..	...	1,825
French Hospital.....	Gen	NPAasn	80	61	20	425	1,910
Golden State Hospital.....	Gen	Indiv	70	27	..	...	704
Hospital of the Good Samaritan+AO.....	Gen	Church	400	349	41	1,032	10,511
Juvenile Hall Hospital.....	Inst	County	121	71	..	...	8,044
Liaison Hospital.....	Gen	NPAasn	28	21	12	348	697
Los Angeles County Hospital (Medical Unit)+AO.....	Gen	County	3,794	2,537	217	3,607	49,576
Los Angeles County Jail Hospital.....	Inst	County	79	62	..	...	2,247
Los Angeles County Psycho- pathic Hospital.....	Unit of Los Angeles County Hospital	Indiv	37	19	..	...	122
Los Angeles Sanitarium.....	Gen						
Methodist Hospital of South- ern California.....	Gen	Church	150	150	40	1,750	7,473
Mount Sinai Hospital.....	Gen	NPAasn	100	53	..	...	25
OrChil	NPAasn		73	64	..	...	2,047
Gen	Indiv		15	6	3	49	243
Gen	NPAasn		260	204	65	1,410	8,822
Queen of Angels Hosp.+AO.....	Gen	Church	225	220	24	1,620	19,314
St. Vincent's Hospital+AO.....	Gen	Church	220	220	25	947	8,973
Santa Fe Coast Lines Hos- pital+AO.....	Indus	NPAasn	120	155	..	...	4,009

Key to symbols and abbreviations is on page 1071

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Southwest General Hospital	Gen	Indiv	24	17	12	546	823
White Memorial Hosp.†††	Gen	Church	190	156	37	1,200	8,036
Los Banos, 2,214—Merced							
City Clinic and Emergency Hospital	Gen	Church	12	7	4	67	321
Madera, 6,457—Madera							
Denborn Hospital	Gen	Indiv	25	15	4	167	778
Madera County Hospital	Gen	County	117	87	8	219	1,501
	TB	County	26	17	..	..	37
Madera Sanitarium	Gen	Indiv	21	10	3	78	608
Manor, —Marin							
Arequipa Sanatorium	TB	NPAasn	50	40	..	..	59
March Field, —Riverside							
Station Hospital	Gen	Army	75	33	5	65	1,080
Mar Island, 500—Solano							
U. S. Naval Hospital†††	Gen	Navy	464	460	5	82	5,616
Martinez, 7,381—Contra Costa							
Contra Costa County Hospital	Gen	County	220	164	12	227	2,679
	TB	County	30	29	6	202	1,141
Martinez Community Hosp.	Gen	Corp	30	29	6	202	1,141
Marysville, 6,646—Yuba							
Rideout Memorial Hospital	Gen	Indiv	32	25	9	181	1,226
Yuba County Hospital	InstGen	County	90	87	6	155	932
McCloud, 2,000—Siskiyou							
McCloud Hospital	Gen	NPAasn	25	12	6	89	558
Merced, 10,135—Merced							
Merced General Hospital	Gen	County	227	182	18	480	3,740
	TB	County	23	55	..	..	51
Merced Hospital	Gen	Indiv	50	35	12	236	1,967
Modesto, 16,370—Stanislaus							
McPeters Hospital	Gen	Indiv	35	..	6	147	1,294
Robertson Hospital	Gen	Indiv	35	26	10	329	1,344
St. Mary's Hospital	Gen	Church	22	22	8	243	1,000
Stanislaus County Hospital	Gen	County	250	240	15	408	3,802
Monrovia, 12,807—Los Angeles							
Norumbega Sanatorium	TB	Indiv	20	14	..	..	60
Pottenger Sanatorium and Clinic†	TB	Corp	90	60	..	..	166
Monterey, 10,084—Monterey							
Monterey Hospital†††	Gen	NPAasn	34	12	6	41	515
Station Hospital	Gen	Army	300	250	2	11	4,099
Monterey Park, 8,531—Los Angeles							
Garfield Hospital†	Gen	Corp	37	31	16	580	1,465
Murphys, 600—Calaveras							
Bret Harte Sanatorium†	TB	Counties	159	136	..	..	203
Napa, 7,740—Napa							
Victory Hospital	Gen	Corp	26	22	8	258	1,072
National City, 10,341—San Diego							
Elwyn Hospital	Gen	Part	10	5	3	43	286
Paradise Valley Sanitarium and Hospital†	Gen	Church	127	79	20	563	2,461
Nevada City, 2,445—Nevada							
Miners Hospital	Gen	NPAasn	20	17	4	49	512
Nevada City Sanitarium	Gen	Indiv	10	4	8	130	249
Nevada County Hospital	InstGen	County	96	86	4	27	423
Newhall, 1,800—Los Angeles							
Wildwood Sanatorium	Unit of	Olive View Sanatorium, Olive View					
Newman, 1,211—Stanislaus							
West Side Hospital	Gen	Corp	15	8	4	92	443
Norwalk, 3,000—Los Angeles							
Norwalk State Hospital	Ment	State	2,484	2,346	..	..	617
Oakland, 302,163—Alameda							
Children's Hospital of the East Bay††	Chil	NPAasn	50	37	..	..	2,504
East Oakland Hospital†	Gen	Corp	80	67	26	1,047	3,676
Highland-Alameda County Hospital†††	Gen	County	485	320	26	916	10,413
Peralta Hospital†	Gen	NPAasn	145	120	40	936	5,531
Providence Hospital†	Gen	Church	193	150	30	1,112	7,094
Samuel Merritt Hospital†	Gen	NPAasn	190	160	35	1,063	6,421
Olive View, —Los Angeles							
Olive View Sanatorium†	TB	County	1,114	1,087	..	..	501
Orange, 7,901—Orange							
Orange County General Hospital††	Gen	County	197	181	20	365	3,498
	TB	County	135	126	..	..	133
St. Joseph Hospital†	Gen	Church	115	80	23	636	3,167
Oxnard, 8,619—Ventura							
St. John's Hospital†	Gen	Church	29	15	9	178	610
Pacific Grove, 6,249—Monterey							
Pine Grove Sanitarium and Hospital	Gen	Indiv	13	2	4	56	110
Palo Alto, 16,774—Santa Clara							
Palo Alto Hospital†	Gen	NPAasn	163	92	25	559	4,674
Veterans Admin. Facility†	Ment	Vet	1,203	1,197	..	..	337
Pasadena, 61,864—Los Angeles							
Collis P. and Howard Huntington Memorial Hos-							
pital††	Gen	NPAasn	203	150	35	753	6,751
Las Encinas Sanitarium	Nerv&IntMed	Corp	89	87	..	..	209
Luther Good Samaritan Hospital	Gen	Church	45	35	9	219	608
St. Luke Hospital†	Gen	Church	75	69	24	519	2,689
Southern California Sanitarium for Nervous and General Diseases	See	Las Encinas Sanitarium					
Woman's Hospital	Mat	NPAasn	14	9	14	333	337
Patton, 4,100—San Bernardino							
Patton State Hospital	Ment	State	4,186	3,936	..	..	1,339

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Pincerville, 3,064—Eldorado							
El Dorado County Hosp...	InstGen	County	65	45	4	27	128
Placerville Sanatorium	Gen	Part	30	15	8	97	594
Pomona, 23,539—Los Angeles							
Pomona Valley Community Hospital	Gen	NPAasn	82	28	21	259	1,425
Porterville, 6,270—Tulare							
New Porterville Hospital	Gen	Indiv	18	14	8	210	810
Portola, 2,000—Plumas							
Western Pacific Railway Hospital	Gen	NPAasn	25	16	4	75	606
Quincy, 1,800—Plumas							
Plumas County Hospital	Gen	County	39	25	4	39	97
Randsburg, 500—Kern							
Rand District Hospital	Gen	Indiv	8	6	2	33	402
Red Bluff, 3,824—Tehama							
St. Elizabeth's Mercy Hosp.	Gen	Church	38	24	8	129	600
Tehama County Hospital	Gen	County	56	44	6	77	642
Redding, 8,100—Shasta							
Shasta County Hospital	InstGen	County	100	80	8	97	2,202
Redlands, 14,324—San Bernardino							
Redlands Community Hosp.	Gen	NPAasn	56	29	13	181	1,303
Redwood City, 12,453—San Mateo							
Canyon Sanatorium	TB	County	66	46	..	..	71
Hassler Health Home	TB	CyCo	277	201	..	..	223
Reedley, 3,170—Fresno							
Reedley Hospital	Gen	NPAasn	19	7	5	107	739
Represa, 250—Sacramento							
Folsom Prison Hospital	Inst	State	84	76	..	..	1,264
Richmond, 23,612—Contra Costa							
Richmond Hospital†	Gen	Part	52	43	11	387	2,351
Riverside, 34,690—Riverside							
Riverside Community Hos-							
pital†	Gen	NPAasn	70	71	18	554	2,771
Riverside County Hospital	Gen	County	222	163	23	382	3,627
	TB	County	100	67	..	..	55
Sherman Institute Hospital	Inst	IA	58	9	..	..	496
Station Hospital	See	March Field					
Rosemead, 5,500—Los Angeles							
Alhambra Sanatorium	N&M	Indiv	22	12	..	..	65
Ross, 1,751—Marin							
Ross General Hospital†	Gen	Corp	51	33	8	181	1,276
	TB	Corp	40	20	..	..	119
Sacramento, 105,953—Sacramento							
Mersey Hospital†	Gen	Church	169	125	31	720	5,760
Sacramento County Hos-							
pital††	Gen	County	430	387	25	681	8,654
	TB	County	45	45	..	..	177
Sutter General Hospital†	Gen	NPAasn	237	180	..	..	7,867
Sutter Maternity Hospital	Mat	NPAasn	78	47	70	1,614	1,816
Salinas, 11,556—Monterey							
El Sausal Sanitarium	Unit of	Monterey County Hospital					
Monterey County Hospital	Gen	County	160	130	10	253	2,365
	TB	County	70	70	..	..	82
Park Lane Hospital	Gen	Indiv	35	25	12	330	..
Salinas Valley Hospital	Gen	Indiv	25	18	0	162	846
San Andreas, 1,082—Calaveras							
San Adreas Hospital	Gen	Indiv	9	3	2	6	73
San Bernardino, 43,646—San Bernardino							
St. Bernardino's Hospital†	Gen	Church	125	47	12	476	1,697
San Bernardino County							
Chnrry Hospital†††	Gen	County	245	272	17	540	4,402
	TB	County	79	..	..	..	..
San Diego, 203,341—San Diego							
Mersey Hospital†	Gen	Church	325	323	98	2,701	11,292
San Diego County General Hospital†††	Gen	County	372	298	13	559	8,397
	TB	County	164	152	..	..	210
U. S. Naval Hospital†††	Gen	Navy	1,184	950	..	..	9,711
Vaueham Home	Unit of	San Diego County General Hosp.					
San Fernando, 9,004—Los Angeles							
San Fernando Hospital	Gen	Indiv	20	14	6	147	260
Veterans Admin. Facility†	TB	Vet	360	342	..	..	645
San Francisco, 634,536—San Francisco							
Children's Hospital†††	Gen	NPAasn	200	138	50	1,219	5,257
Chinese Hospital	Gen	NPAasn	50	23	8	123	608
Dante Hospital	Gen	Corp	172	115	10	154	4,850
Franklin Hospital†††	Gen	NPAasn	225	203	23	429	5,892
French Hospital†††	Gen	NPAasn	220	159	12	275	4,320
Greens' Eye Hospital†	ENT	Part	35	15	..	..	959
Hahnemann Hospital	Gen	NPAasn	68	31	12	48	818
Laguna Honda Home	InstGen	CyCo	770	770	..	..	897
Letterman General Hosp.††	Gen	Army	1,192	780	10	143	9,061
Mary's Help Hospital†††	Gen	Church	122	92	25	566	3,619
Mt. Zion Hospital†††	Gen	NPAasn	161	108	26	431	1,275
Park Sanitarium	N&M	Corp	33	22	..	..	899
St. Elizabeth's Infant Hos-							
pital	Match	Church	75	54	10	67	238
St. Francis Hospital†	Gen	NPAasn	200	206	65	926	6,114
St. Joseph's Hospital†††	Gen	Church	244	170	45	1,365	6,214
St. Luke's Hospital†††	Gen	Church	200	157	20	409	5,411
St. Mary's Hospital†††	Gen	Church	335	292	60	1,389	9,491
San Francisco Hospital†††	Gen	CyCo	931	630	50	591	15,943
	TB	CyCo	495	464	..	..	707
San Francisco Polyclinic	Gen	NPAasn	12	7	..	..	562
San Francisco Psychopathic Hospital	Unit of	San Francisco Hospital					
Shriners Hospital for Crip-							
pled Children†	Orth	NPAasn	60	58	..	..	245
Southern Pacific General Hospital††	Indus	NPAasn	400	327	..	..	6,034

Key to symbols and abbreviations is on page 1071

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Basinets	Number of Births	Admissions†
Stanford University Hospitals*+▲	Gen	NPAasn	321	251	27	740	8,911
U. S. Marine Hospital*+▲	Gen	USPHS	465	431	..	...	5,211
University of California Hospital*+▲	Gen	State	279	217	30	658	7,228
Veterans Admin. Facility*+▲	Gen	Vet	340	331	..	...	2,310
Sanger, 4,017—Fresno	Gen	Indiv	16	10	4	111	475
Sanger Sanitarium	Gen	Indiv	16	10	4	111	475
Sanitarium, 500—Napa	Gen	Indiv	16	10	4	111	475
St. Helena Sanitarium and Hospital*+▲	Gen	Church	130	91	6	107	2,542
San Jacinto, 1,356—Riverside	Gen	IA	34	19	3	29	333
Soboba Indian Hospital...	Gen	IA	34	19	3	29	333
San Jose, 68,457—Santa Clara	Gen	Corp	45	33	..	...	152
Alum Rock Sanatorium...	TB	Corp	103	80	30	674	3,798
O'Connor Sanitarium*+▲	Gen	Church	131	101	30	943	4,561
San Jose Hospital*+▲	Gen	NPAasn	131	101	30	943	4,561
Santa Clara County Hospital*+▲	Gen	Tb County	536	454	35	813	7,501
Santa Clara County Sanatorium*+▲	Unit of Santa Clara County Hospital	Unit of Santa Clara County Hospital	...	...	...	...	...
Sunnyholme Preventorium...	Unit of Santa Clara County Hospital	Unit of Santa Clara County Hospital	...	...	...	...	...
San Leandro, 14,001—Alameda	Gen	County	656	631	..	...	1,417
Fairmont Hospital of Alameda County*+▲	Gen	TB County	100	99	..	...	443
San Luis Obispo, 8,881—San Luis Obispo	Gen	Indiv	20	15	5	81	885
Mountain View Hospital...	Gen	Indiv	20	15	5	81	885
San Luis Obispo County Tuberculosis Sanatorium...	Unit of San Luis Obispo General Hospital	Unit of San Luis Obispo General Hospital	...	...	...	...	...
San Luis Obispo General Hospital	Gen	Tb County	110	48	8	107	1,430
San Luis Sanitarium...	Gen	Indiv	25	14	7	137	1,000
San Mateo, 19,403—San Mateo	Gen	County	158	128	12	159	2,079
Community Hospital of San Mateo County*+▲	Gen	TB County	42	34	..	...	66
Mills Memorial Hospital*+▲	Gen	Church	124	92	33	526	3,883
San Pedro, —Los Angeles	Gen	Corp	110	65	29	512	2,432
San Pedro Hospital*+▲	Gen	Army	86	35	..	...	1,285
Station Hospital	Gen	Army	86	35	..	...	1,285
San Quentin, 329—Marin	Gen	State	150	125	..	...	1,280
Charles L. Neumiller Memorial Hospital	Inst	State	150	125	..	...	1,280
San Rafael, 8,573—Marin	Gen	Tb County	70	53	..	...	90
Marin County Hospital...	Gen	Indiv	40	25	15	271	1,163
San Rafael Cottage Hosp.	Gen	Indiv	40	25	15	271	1,163
Santa Barbara, 34,958—Santa Barbara	Gen	Church	85	63	20	242	2,245
St. Francis Hospital*+▲	Gen	Church	85	63	20	242	2,245
Santa Barbara Cottage Hospital*+▲	Gen	NPAasn	165	112	20	273	3,921
Santa Barbara General Hospital*+▲	Gen	TB County	190	114	12	229	2,137
Santa Cruz, 16,896—Santa Cruz	Gen	County	150	145	6	131	1,333
Santa Cruz County Hosp.	Gen	Corp	35	28	12	230	1,274
Santa Cruz Hospital...	Gen	Church	30	...	10	Estab. 1941	...
Sisters Hospital	Gen	Church	30	...	10	Estab. 1941	...
Santa Maria, 8,522—Santa Barbara	Gen	Church	45	29	14	273	1,496
Our Lady of Perpetual Help Hospital	Gen	Church	45	29	14	273	1,496
Santa Monica, 53,500—Los Angeles	Gen	Church	150	135	30	1,575	6,727
Santa Monica Hospital*+▲	Gen	Church	150	135	30	1,575	6,727
Santa Rosa, 12,605—Sonoma	Gen	Part	20	14	5	187	759
Eliza Tanner Hospital...	Gen	Indiv	41	15	8	113	858
General Hospital	Gen	County	315	267	14	256	2,554
Sonoma County Hosp.*+▲	Gen	TB County	111	96	..	...	58
Shasta Dam Hospital...	Indus	NPAasn	25	19	..	...	867
Shasta Dam Hospital...	Indiv	County	25	13	4	52	647
Shasta Dam Hospital...	Corp	County	41	23	4	41	493
Shasta Dam Hospital...	Corp	County	46	39	20	1,006	1,813
Shasta Dam Hospital...	Indiv	County	100	78	..	...	89
Shasta Dam Hospital...	Gen	Corp	34	No data supplied	...	...	...
Spadina, 275—Los Angeles	Gen	State	1,734	1,251	..	...	457
Pacific Colony	MeDe	State	1,734	1,251	..	...	457
Springville, 665—Tulare	TB	Counties	146	128	..	...	145
Tulare-Kings Counties Joint Tuberculosis Hospital	TB	Counties	146	128	..	...	145
Stockton, 54,714—San Joaquin	Gen	Corp	76	63	18	359	2,717
Dameron Hospital	Gen	Corp	76	63	18	359	2,717
St. Joseph's Home and Hospital	Gen	Church	95	68	15	609	2,951
Stockton State Hospital...	Ment	State	4,632	4,448	..	...	1,553
Susanville, 1,575—Lassen	Gen	Indiv	40	11	6	54	640
Riverside Hospital	Gen	State	2,951	2,725	..	...	982
Talmage, 350—Mendocino	Gen	State	2,951	2,725	..	...	982
Mendocino State Hospital*+▲	Ment	State	2,951	2,725	..	...	982
Tehachapi, 1,261—Kern	Gen	Indiv	15	9	4	56	436
Tehachapi Valley Hospital	Gen	Indiv	15	9	4	56	436
Terminal Island, —Los Angeles	Gen	Indiv	15	9	4	56	436
Federal Correctional Hospital*+▲	Inst	USPHS	41	35	..	...	513

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Basinets	Number of Births	Admissions†
Torrance, 9,350—Los Angeles	Gen	NPAasn	35	27	12	416	1,251
Jared Sidney Torrance Memorial Hospital	Gen	NPAasn	35	27	12	416	1,251
Trona, 775—San Bernardino	Gen	NPAasn	20	9	6	56	646
Trona Hospital	Gen	NPAasn	20	9	6	56	646
Tulare, 8,259—Tulare	Gen	Indiv	12	7	12	363	473
East Tulare Hospital	Gen	Indiv	12	7	12	363	473
Tulare County General Hospital	Gen	County	103	83	15	606	3,418
Tulare Hospital	Gen	Indiv	24	17	4	6	813
Turlock, 4,839—Stanislaus	Gen	Church	40	21	8	176	910
Emanuel Hospital	Gen	Indiv	15	6	6	...	315
Lillian Collins Hospital...	Gen	Indiv	15	6	6	...	315
Upland, 6,316—San Bernardino	Gen	NPAasn	60	35	22	277	1,949
San Antonio Community Hospital	Gen	NPAasn	60	35	22	277	1,949
Vallejo, 20,072—Solano	Gen	Indiv	70	45	15	500	1,330
Vallejo General Hospital...	Gen	Indiv	70	45	15	500	1,330
Ventura, 13,264—Ventura	Gen	County	65	29	20	190	1,339
Bard Memorial Hospital...	Unit of Ventura County Hospital	Unit of Ventura County Hospital	...	...	...	...	...
Foster Memorial Hospital*+▲	Gen	NPAasn	200	219	10	256	4,483
Ventura County Hospital	Gen	County	200	219	10	256	4,483
Veterans Home, 1,866—Napa	Inst	State	268	220	..	...	1,617
Veterans Home Hospital*+▲	Inst	State	268	220	..	...	1,617
Vineburg, 100—Sonoma	Gen	Indiv	15	5	3	35	161
Burdale Hospital	Gen	Indiv	15	5	3	35	161
Visalia, 8,904—Tulare	Gen	City	50	23	15	327	1,417
Visalia Municipal Hospital	Gen	City	50	23	15	327	1,417
Watsonville, 8,537—Santa Cruz	Gen	Corp	37	27	10	244	1,279
Watsonville Hospital	Gen	Corp	37	27	10	244	1,279
Weed, 5,000—Siskiyou	Gen	Part	16	9	4	83	431
Weed Hospital	Gen	Part	16	9	4	83	431
Weimar, 125—Placer	TB	Counties	567	514	..	...	453
Weimar Joint Sanatorium...	TB	Counties	567	514	..	...	453
West Los Angeles, —Los Angeles	Gen	Ment Vet	2,431	2,283	..	...	9,541
Veterans Admin. Facility*+▲	Gen	Ment Vet	2,431	2,283	..	...	9,541
Westwood, 5,000—Lassen	Gen	NPAasn	42	20	10	131	1,112
Westwood Hospital	Gen	NPAasn	42	20	10	131	1,112
Willits, 1,025—Mendocino	Gen	NPAasn	22	14	5	67	613
Frank R. Howard Memorial Hospital	Gen	NPAasn	22	14	5	67	613
Woodland, 6,637—Yolo	Gen	Part	65	47	10	194	2,034
Woodland Clinic Hospital*+▲	Gen	Part	65	47	10	194	2,034
Yosemite National Park, 500—Mariposa	Gen	Indiv	14	6	2	20	336
Lewis Memorial Hospital...	Gen	Indiv	14	6	2	20	336
Yreka, 2,485—Siskiyou	Inst	Gen County	165	136	14	163	1,506
Siskiyou County General Hospital	Inst	Gen County	165	136	14	163	1,506
Yuba City, 4,968—Sutter	Inst	Gen Indiv	67	28	8	109	1,055
Sutter County Hospital...	Inst	Gen Indiv	67	28	8	109	1,055
Yuba City General Hospital	Gen	Indiv	20	15	6	233	916

Related Institutions

Altadena, —Los Angeles	Conv	NPAasn	40	37	..	...	50
Pasadena Preventorium...	Conv	NPAasn	40	37	..	...	50
Artesia, 3,891—Los Angeles	Indiv	N&M	53	45	..	...	170
Pioneer Sanitarium	Indiv	N&M	53	45	..	...	170
Azusa, 5,209—Los Angeles	Conv	NPAasn	96	83	..	...	246
Rural Rest Home and Sanitarium	Conv	NPAasn	96	83	..	...	246
Belmont, 1,229—San Mateo	TbChil	NPAasn	20	18	..	...	25
Chas. S. Howard Foundation	TbChil	NPAasn	20	18	..	...	25
The Hillwell	Indiv	N&M	42	30	..	...	73
Chloremont, 3,037—Los Angeles	Inst	NPAasn	22	4	..	...	313
Claremont Colleges Infirmary	Inst	NPAasn	22	4	..	...	313
Duarte, 2,000—Los Angeles	Part	Church	55	50	..	...	22
Palm Grove Sanatorium...	Part	Church	120	110	..	...	22
Hospital	Iso	County	16	8	..	...	73
Glendale, 82,582—Los Angeles	Indiv	N&M	25	25	..	...	5
Villa Shw Rest Home...	Indiv	N&M	25	25	..	...	5
Keene, 164—Kern	County	TbChil	44	32	..	...	27
Kern County Preventorium	County	TbChil	44	32	..	...	27
La Crescenta, 3,000—Los Angeles	Part	N&M	28	20	..	...	121
Kimball Sanitarium	Part	N&M	28	20	..	...	121
Laneaster, 2,400—Los Angeles	TB	Part	118	...	..	...	73
Antelope Valley Sanatorium and Hospital	TB	Part	118	...	..	...	73
Larkspur, 1,558—Marin	Conv	Indiv	13	5	..	...	50
Larkspur Convalescent and Rest Home	Conv	Indiv	13	5	..	...	50
Lincoln, 2,044—Placer	Indiv	N&M	15	10	..	...	12
Joslin's Sanatorium	Indiv	N&M	15	10	..	...	12
Long Beach, 164,271—Los Angeles	Conv	Indiv	56	26	..	...	312
California Sanitarium	Conv	Indiv	56	26	..	...	312
Los Angeles, 1,504,277—Los Angeles	Conv	Indiv	22	15	..	...	171
Chase Diet Sanitarium...	Conv	Indiv	14	12	..	...	53
Doughty Sanatorium	TB	NPAasn	44	24	6	67	...
Florence Crittenton Home...	Conv	NPAasn	24	22	..	...	71
Junior League Convalescent Home for Children	Conv	NPAasn	24	22	..	...	71
Resthaven	N&M	Church	45	36	..	...	135
St. Anne's Maternity Hosp.	Mat	Church	25	16	14	127	...
St. Barnabas Rest Home	Church	Church	15	11	..	...	161
for Men	Conv	Church	15	11	..	...	161
Salvation Army Women's Home and Hospital	Mat	Church	92	51	8	131	291
Twentieth Century Sanitarium	N&M	Indiv	45	45	..	...	51

Key to symbols and abbreviations is on page 1071

CALIFORNIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Monrovia, 12,807—Los Angeles Maryknoll Sanatorium TB	Church		50	50	..	...	51
Montebello, 8,016—Los Angeles Los Angeles Convalescent Home	Conv	NPAasn	42	30	..	...	419
National City, 10,344—San Diego Hillcrest Home	N&M	Indiv	50	40	..	...	67
Oakland, 302,163—Alameda Salvation Army Women's Home and Hospital.....	Mat	Church	66	60	38	129	175
Pacifica, —Los Angeles Independent Order of Foresters California Tuberculosis Sanatorium	TB	NPAasn	60	10	..	...	20
Rosemead, 5,500—Los Angeles Rosemead Lodge	N&M	Indiv	68	38	..	...	187
Ross, 1,751—Marlin Cedars Development School	McDe	Corp	46	33	..	...	46
San Diego, 203,341—San Diego Fraser Hall	Conv	Part	25	16	..	...	110
San Fernando, 9,004—Los Angeles Pauling Rest Home.....	TB	County	50	50	..	...	35
San Francisco, 634,536—San Francisco Garden Nursing Home.....	Incur	NPAasn	67	67	..	...	73
Greer Home	Corp		21	16	..	...	35
San Gabriel, 11,867—Los Angeles Baldy View Sanatorium.....	N&M	Part	85	85	..	...	61
Mission Lodge Sanatorium.....	N&M	Indiv	60	60	..	...	45
San Marino Sanatorium.....	N&M	Part	75	61	..	...	61
San Jose, 68,457—Santa Clara Beale Sanatorium	N&M	Indiv	15	9	..	...	42
San Mateo, 19,403—San Mateo San Mateo Preventorium.....	TB	NPAasn	28	22	..	...	19
Santa Barbara, 34,958—Santa Barbara La Loma Feliz	Chil	NPAasn	20	20	..	...	20
Santa Monica, 63,500—Los Angeles Loamshire Convalescent Hospital and Rest Home.....	Conv	Corp	22	15	..	...	156
Stanford University, 720—Santa Clara Stanford Convalescent Home	Chil	NPAasn	80	77	..	...	178
Sunland, —Los Angeles Sunland Sanatorium	TB	Corp	60	51	..	...	91
Tujunga, —Los Angeles Reslock Health Retreat.....	Chil	Indiv	34	26	..	...	55
Verdugo City, 1,500—Los Angeles Rockhaven Sanatorium	N&M	Indiv	100	100	..	...	58

COLORADO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Alamosa, 5,613—Alamosa Community Hospital	Gen	Church	43	24	8	238	1,339
Aspen, 777—Pitkin Citizens' Hospital	Gen	NPAasn	15	5	2	8	60
Boulder, 12,958—Boulder Boulder-Colorado Sanatorium and Hospital*AO	Gen	Church	101	39	6	38	1,274
Boulder County Hospital.....	Gen	County	40	41	6	75	617
Boulder Community Hospital.....	Gen	NPAasn	45	28	12	142	1,283
Brush, 2,481—Morgan Eben-Ezer Hospital	Gen	Church	24	14	8	95	642
Canon City, 6,690—Fremont Colorado Hospital	Gen	Indiv	28	19	5	64	630
Colorado State Penitentiary Hospital	Inst	State	45	41	..	...	1,733
St. Thomas More Hospital.....	Gen	Church	40	15	6	83	512
Cheyenne Wells, 695—Cheyenne Cheyenne County Hospital.....	Gen	Indiv	31	5	6	24	191
Climax, 250—Lake Climax Molybdenum Company Hospital	Indus	NPAasn	10	3	..	...	194
Colorado Springs, 36,789—El Paso Beth-El General Hospital and Sanatorium*AO	Gen	Church	136	73	22	343	2,194
Colorado Springs Psychopathic Hospital	N&M	Part	150	125	..	...	135
Gloekner Sanatorium and Hospital*AO	Gen	Church	100	70	12	203	1,963
National Methodist Episcopal Sanatorium for Tuberculosis.....	Unit of Beth-El General Hospital and Sanatorium	Sanatorium	60	44	..	...	68
Observation Hospital.....	Unit of Beth-El General Hospital and Sanatorium	Sanatorium					
St. Francis Hospital and Sanatorium*AO	Gen	Church	75	50	15	268	1,584
Union Printers Home and Tuberculosis Sanatorium.....	Gen	NPAasn	112	109	..	...	207
Cortez, 1,778—Montezuma Johnson Hospital	Gen	Indiv	15	8	3	54	329

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Cripple Creek, 2,358—Teller Cripple Creek Hospital.....	Gen	NPAasn	25	11	6	86	637
Del Norte, 1,923—Rio Grande St. Joseph's Hospital and Sanatorium	Gen	Church	45	20	11	154	826
Delta, 3,717—Delta Western Slope Memorial Hospital	Gen	NPAasn	12	5	3	15	202
Denver, 322,412—Denver Bethesda Sanatorium	TB	Church	65	24	..	...	37
Beth Israel Hospital.....	Gen	NPAasn	55	35	10	61	1,198
Childrens Hospital*AO	Chil	NPAasn	200	121	..	...	4,260
Colorado General Hosp.*AO	Gen	State	245	171	20	655	4,585
Colorado Psychopathic Hospital*AO	Ment	State	78	79	..	...	897
Denver General Hosp.*AO.....	Gen	CyCo	596	366	36	401	8,219
Ex-Patients' Tubercular Home	TB	NPAasn	71	43	..	...	100
Fitzsimons General Hosp.*AO	Gen	Army	1,185	888	6	77	7,314
Mercy Hospital*AO	Gen	Church	210	182	30	829	7,838
Mt. Alry Sanatorium.....	N&M	Corp	66	41	..	...	450
National Jewish Hospital*AO	TB	NPAasn	257	238	..	...	211
Porter Sanatorium and Hospital.....	Gen	Church	90	65	18	364	2,150
Presbyterian Hospital*AO	Gen	Church	150	119	25	885	5,067
Robert W. Speer Memorial Hospital for Children.....	Unit of Denver General Hospital						
St. Anthony Hospital*AO.....	Gen	Church	190	122	30	739	4,089
St. Joseph's Hospital*AO.....	Gen	Church	246	217	54	1,026	7,397
St. Luke's Hospital*AO.....	Gen	Church	219	180	40	783	7,325
Steele Memorial Hospital.....	Gen	CyCo	80	23	..	...	624
Durango, 5,887—LaPlata Mercy Hospital	Gen	Church	55	26	9	170	2,289
Ochsner Hospital	Gen	Part	33	20	7	98	728
Edgewater, 1,618—Jefferson Craig Colony	TB	NPAasn	50	38	..	...	23
Sands House	TB	NPAasn	44	34	..	...	24
Englewood, 9,680—Arapahoe Federal Correctional Institution	Inst	USPHS	25	3	..	Estab.	1940
Swedish National Sanatorium	TB	NPAasn	00	No data supplied			
Fairplay, 730—Park Fairplay Hospital	Gen	Indiv	14	5	2	28	201
Fort Collins, 12,251—Larimer Larimer County Hospital.....	Gen	County	52	42	8	330	1,831
Fort Logan, 800—Arapahoe Station Hospital	Gen	Army	74	39	..	...	677
Fort Lyon, 1,180—Bent Veterans Adm'n. Facility*AO	Ment	Vet	805	690	..	...	145
Fort Morgan, 4,884—Morgan Fort Morgan Hospital.....	Gen	Indiv	25	16	6	112	616
Fruita, 1,466—Mesa Fruita Community Hospital	Gen	Indiv	8	2	2	37	176
.....	Gen	Part	20	12	4	36	381
St. Mary's Hospital*AO.....	Gen	Church	65	38	12	277	1,487
Greeley, 15,995—Weld Greeley Hospital	Gen	County	108	88	26	550	3,579
Gunnison, 2,177—Gunnison Gunnison Community Hosp.	Gen	Indiv	25	7	5	54	369
Hayden, 640—Routt Solandt Memorial Hospital.....	Gen	NPAasn	16	11	3	57	374
Holyoke, 1,150—Phillips Holyoke Hospital	Gen	Indiv	8	4	2	10	289
Ignacio, 538—LaPlata Edward T. Taylor Indian Hospital	Gen	IA	44	18	3	21	649
Julesburg, 1,019—Sedgewick Community Hospital	Gen	Indiv	10	5	4	45	244
La Junta, 7,040—Otero Atebison, Topeka and Santa Fe Railroad Hospital*AO	Indus	NPAasn	36	22	..	...	494
Mennonite Hospital and Sanatorium	Gen	Church	71	59	14	167	1,045
Lendville, 4,774—Lake St. Vincent Hospital.....	Gen	Church	36	16	10	100	350
Longmont, 7,406—Boulder Longmont Hospital	Gen	Indiv	33	17	7	73	735
St. Vrain Hospital	Gen	Indiv	25	12	5	35	405
Loveland, 6,145—Larimer Loveland Hospital and Clinic	Gen	Indiv	10	5	4	...	218
Monte Vista	Gen	Indiv	16	8	8	82	404
Oak Creek Hospital.....	Gen	Indiv	15	6	3	31	338
Owray, 931—Owray Bates Hospital and Sanatorium	Gen	Corp	10	5	2	11	193
Pueblo, 52,162—Pueblo Colorado State Hospital*AO	Ment	State	4,199	4,095	..	...	507
Corwin Hospital*AO	Gen	NPAasn	206	126	22	281	3,332
Parkview Hospital*AO	Gen	NPAasn	96	54	14	287	1,751
St. Mary Hospital*AO.....	Gen	Church	165	102	27	469	2,993
Woodcroft Hospital*AO	N&M	Corp	120	65	..	...	170
Rocky Ford, 3,494—Otero Physicans Hospital	Gen	NPAasn	10	9	3	142	521
Salida, 4,900—Chaffee Denver and Rio Grande Western Railroad Hospital*AO	Gen	NPAasn	82	45	4	101	1,470

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Spivak, 350—Jefferson Sanatorium of the Jewish Consumptives' Relief Society*†	TB	NPAasn	300	224	..	...	153
Sterling, 7,411—Logan Good Samaritan Hospital..	Gen	Chureh	27	16	10	102	880
St. Benedict Hospital*†	Gen	Chureh	30	18	6	150	925
Towaoc, 50—Montezuma Ute Mountain Indian Hosp.	Gen	IA	26	10	4	22	369
Trinidad, 13,223—Las Animas Mt. San Rafael Hospital*†	Gen	Church	81	33	7	154	707
Walsenburg, 5,855—Huerfano Lamme Brothers Hospital..	Gen	Part	20	8	2	11	350
Wheat Ridge, 500—Jefferson Evangelical Lutheran Sanatorium	TB	Chureh	110	77	..	...	58
Woodmen, 400—El Paso Modern Woodmen of America Sanatorium*†	TB	NPAasn	155	74	..	...	85
Wray, 2,061—Yuma Wray Hospital	Gen	Indiv	15	5	6	62	280

Related institutions

Boulder, 12,938—Boulder Mesa Vista Sanatorium....	TB	Part	60	39	..	...	40
Burlington, 1,250—Kit Carson Burlington Hospital	Gen	Part	8	4	4	65	321
Collbran, 301—Mesa Plateau Valley Congregation Hospital	Gen	Church	13	5	5	35	215
Colorado Springs, 36,789—El Paso Cragmor Sanatorium	TB	NPAasn	125	30	..	...	65
Denver, 322,412—Denver Florence Crittenton Home (Mary H. Donaldson Woman's Hospital)	Mat	NPAasn	11	6	9	91	135
St. Francis Sanatorium....	TB	Church	20	16	..	...	44
Salvation Army Woman's Home and Hospital.....	Mat	Church	30	28	18	81	118
Englewood, 9,080—Arapahoe Costello Home	TB	NPAasn	16	8	..	...	8
Temple Sanatorium	N&M	Indiv	30	29	..	...	204
Flagler, 500—Kit Carson Flagler Hospital	Gen	Indiv	10	5	4	52	227
Golden, 3,175—Jefferson Hospital-State Industrial School for Boys.....	Inst	State	25	7	..	...	548
Grand Junction, 12,479—Mesa State Home and Training School for Mental Defectives	McDe	State	525	312	..	...	42
Greeley, 15,995—Weld Island Grove Hospital.....	Inst	Iso County	67	51	..	...	180
Homebake, 225—Rio Grande Colorado State Soldiers and Sailors Home	Inst	State	35	20	..	...	...
Ridge, 207—Jefferson State Home and Training School for Mental Defectives	McDe	State	325	310	..	...	36
Yuma, 1,600—Yuma Yuma Community Hospital. Gen	NPAasn		12	No data supplied			

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Bridgeport, 147,121—Fairfield Bridgeport Hospital*†	Gen	NPAasn	326	306	74	1,873	10,176
Englewood Hospital	TB	City	116	13	..	...	283
St. Vincent's Hospital*†	Gen	Church	270	263	55	1,541	8,440
Bristol, 30,167—Hartford Bristol Hospital*†	Gen	NPAasn	100	101	25	642	4,063
Canaan, 1,500—Litchfield Robert C. Geer Memorial Hospital	Gen	NPAasn	25	10	7	55	539
Cromwell, 2,700—Middlesex Cromwell Hall	Nerv	Corp	33	16	..	...	90
Danbury, 22,339—Fairfield Danbury Hospital*†	Gen	NPAasn	180	178	30	578	3,243
Derby, 10,287—New Haven Griffin Hospital*†	Gen	NPAasn	88	72	26	522	2,634
Greens Farms, 275—Fairfield Hall-Brooke Sanatorium ..	N&M	Corp	75	42	..	...	193
Greenwich, 5,951—Fairfield Blythwood	N&M	Corp	79	53	..	...	110
Greenwich Hospital*†	Gen	NPAasn	115	90	20	411	2,632
St. Luke's Convalescent Hospital	ChilCony	Church	110	81	..	...	883
Hartford, 166,267—Hartford Avery Convalescent Hospital. Unit of Hartford Hospital	Unit	State	350	326	..	...	293
Cedarcrest Sanatorium	TB	NPAasn	716	610	146	3,061	19,345
Hartford Hospital*†	Gen	NPAasn	54	46	6	123	1,739
Mt. Sinai Hospital*†	Gen	NPAasn					

CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Municipal Hospitals*†	Gen	Iso City	315	143	34	193	3,517
Neuro-Psychiatric Institute of the Hartford Retreat*†	N&M	NPAasn	270	250	..	...	631
St. Francis Hospital*†	Gen	Church	492	335	103	1,913	14,533
Kent, 1,245—Litchfield Kent School Infirmary.....	Inst	NPAasn	26	..	..	...	...
Lakeville, 1,500—Litchfield Hotchkiss School Infirmary. Inst	NPAasn		36	15	..	...	730
Manchester, 23,000—Hartford Manchester Memorial Hosp.*†	Gen	NPAasn	100	87	20	434	3,141
Meriden, 39,494—New Haven Meriden Hospital*†	Gen	NPAasn	116	83	24	571	2,812
Underhill, Meriden State Tuberculosis Sanatorium... TbChil	State		206	276	..	...	311
Middletown, 26,495—Middlesex Connecticut State Hospital*†	Ment	State	3,155	3,044	..	...	761
Middlesex Hospital*†	Gen	NPAasn	140	99	27	554	3,507
Milford, 11,200—New Haven Milford Hospital	Gen	NPAasn	50	23	15	221	1,057
New Britain, 68,685—Hartford New Britain General Hospital*†	Gen	NPAasn	230	174	50	1,115	9,021
New Haven, 160,605—New Haven Dr. J. H. Evans' Private Hospital	Gen	Indiv	8	4	..	...	197
Grace Hospital*†	Gen	NPAasn	230	180	40	1,177	6,000
Hospital of St. Raphael*†	Gen	Church	240	213	40	1,139	7,003
New Haven Hospital*†	Gen	NPAasn	521	434	50	1,913	11,453
Psychiatric Clinic, Yale School of Medicine.....	Unit	of New Haven Hospital					
Sarah Wey Tompkins Memorial Pavilion.....	Unit	of New Haven Hospital					
Newington, 5,449—Hartford Newington Home for Crippled Children.....	Orth	NPAasn	200	153	..	...	130
Veterans Admin. Facility*†	Gen	Vet	330	271	..	...	2,001
New London, 30,456—New London Home Memorial Hospital....	Gen	NPAasn	50	34	10	143	975
Lawrence and Memorial Associated Hospitals*†	Gen	NPAasn	208	130	40	830	3,733
Dr. Lena's Surgical Hospital Surg U. S. Coast Guard Academy Hospital*†	Inst	USPHS	30	0	..	...	370
New Milford, 3,000—Litchfield New Milford Hospital.....	Gen	NPAasn	30	10	6	71	830
Newtown, 603—Fairfield Fairfield State Hospital*†	Ment	State	2,003	1,362	..	...	1,233
Norwalk, 39,849—Fairfield Norwalk General Hosp.*†	Gen	NPAasn	173	146	33	1,030	5,417
Norwich, 23,652—New London Norwich State Hospital*†	Ment	State	2,711	2,414	..	...	711
Norwich State Tuberculosis Sanatorium (Uncas-On-Thames)*†	TB	State	428	364	..	...	330
William W. Backus Hosp.*†	Gen	NPAasn	131	86	29	696	3,193
Portland, 2,500—Middlesex Elmerest Manor	N&M	Indiv	32	31	..	...	201
Putnam, 7,775—Windham Day Kimball Hospital*†	Gen	NPAasn	60	62	16	294	1,921
Rockville, 7,572—Tolland Rockville City Hospital.....	Gen	NPAasn	35	18	6	126	551
Sharon, 500—Litchfield Sharon Hospital*†	Gen	NPAasn	40	18	12	184	737
Shelton, 10,971—Fairfield Laurel Heights State Tuberculosis Sanatorium*†	TB	State	332	363	..	...	343
Southbury, 1,100—New Haven Southbury Training School..	McDe	State	1,500	566	..	...	666
Southington, 5,653—Hartford Bradley Memorial Hospital..	Gen	NPAasn	14	7	4	...	267
South Norwalk, —Fairfield Woodscourt (Wadsworth Sanatorium)	N&M	Indiv	25	9	..	...	6
Stafford Springs, 3,401—Tolland Cyril and Julia C. Johnson Memorial Hospital*†	Gen	NPAasn	40	25	10	182	657
Stamford, 47,535—Fairfield Dr. Barnes Sanatorium.....	N&M	Corp	60	35	..	...	115
Stamford Hall	N&M	Corp	150	120	..	...	132
Stamford Hospital*†	Gen	NPAasn	253	158	47	972	6,577
Topshassee Grange	N&M	Corp	26	11	..	...	9
Torrington, 26,988—Litchfield Charlotte Hungerford Hospital*†	Gen	NPAasn	133	86	27	553	3,226
Wallingford, 11,425—New Haven Gaylord Farm Sanatorium*†	TB	NPAasn	145	137	..	...	203
Waterbury, 99,314—New Haven St. Mary's Hospital*†	Gen	Church	320	221	64	1,322	10,557
Waterbury Hospital*†	Gen	NPAasn	209	205	67	1,003	7,297
Waterford, 100—New London The Seaside	TbChil	State	145	142	..	...	25
.....	N&M	Corp	110	79	..	...	295
.....	Gen	NPAasn	78	57	18	264	2,000
.....	Gen	NPAasn	64	44	11	224	1,120

Key to symbols and abbreviations is on page 1071

CONNECTICUT—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Avon, 1,000—Hartford							
Avon Old Farms Infirmary. Inst	NPAasn		12	2	..	...	115
Bridgeport, 147,121—Fairfield							
Hillside Home and Hospital. Chr	City		300	275	..	...	836
Cheshire, 4,352—New Haven							
Connecticut Reformatory ... Inst	State		28	5	..	...	199
East Lyme, 3,338—New London							
Ida Thompson Hospital..... Unit of Connecticut State Farm for Women, Niantic							
Greenwich, 5,981—Fairfield							
Municipal Hospital TbIso	City		72	36	..	...	157
Mansfield Depot, 300—Tolland							
Mansfield State Training School and Hospital MeDe	State		1,266	1,150	..	...	186
Meriden, 39,494—New Haven							
Connecticut School for Boys Inst	State		30	7	..	...	300
New Canaan, 2,372—Fairfield							
Silver Hill Foundation..... Nerv	Corp		25	25	..	...	148
New Haven, 160,005—New Haven							
Jewish Home for the Aged. Inst	NPAasn		96	96	..	...	19
Yale Infirmary Inst	NPAasn		30	10	..	...	760
Niantic, 1,312—New London							
Connecticut State Farm for Women Inst	State		75	60	8	57	192
Rocky Hill, 1,000—Hartford							
State Veterans Hospital..... Inst	State		234	107	..	...	1,003
Waterbury, 99,314—New Haven							
Connecticut Children's Hosp. MeDe	Indiv		125	112	..	...	71
West Hartford, 33,776—Hartford							
St. Agnes Home..... Mat	Church		9	2	0	75	75
West Haven, 30,021—New Haven							
West Haven Convalescent Home Conv	Indiv		22	22	..	...	22
West Suffield, 700—Hartford							
Travelers Rest House..... Conv	NPAasn		40	6	..	...	63
Wethersfield, 9,644—Hartford							
Connecticut State Prison Hospital Inst	State		30	16	..	...	242
Woodmont, 749—New Haven							
Woodmont Hall Conv	Indiv		12	8	..	...	24

DELAWARE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Dover, 5,517—Kent							
Kent General Hospital..... Gen	NPAasn		60	37	10	204	1,367
Farmhurst, 500—New Castle							
Delaware State Hospital+ao Ment	State		1,247	1,198	..	...	327
Fort Dupont (Delaware City P.O.), New Castle							
Station Hospital Gen	Army		40	8	..	...	367
Lewes, 2,246—Sussex							
Beebe Hospital..... Gen	NPAasn		104	46	9	127	1,455
Marshallton, 1,500—New Castle							
Brandywine Sanatorium TB	State		160	134	..	...	729
Edgewood Sanatorium TB	State		40	33	..	...	45
Middletown, 1,529—New Castle							
Maternity Home Mat	Indiv		20	8	10	43	80
Milford, 4,214—Sussex							
Milford Memorial Hospital. Gen	NPAasn		100	54	18	260	2,172
Smyrna, 1,570—Kent							
Delaware State Welfare Home Hospital InstGenStateCo			111	75	8	60	1,066
Wilmington, 112,504—New Castle							
Alfred I. duPont Institute of The Nemours Foundation+ .. OrthChil	NPAasn		85	70	..	...	120
Delaware Hospital+ao Gen	NPAasn		347	170	53	660	5,452
Doris Memorial Hospital..... Unit of Wilmington General Hospital			15	7	6	63	261
Gross Private Hospital..... Gen	Corp		210	123	43	634	4,673
Memorial Hospital+ao Gen	NPAasn		105	67	35	332	1,963
St. Francis Hospital+ao Gen	Church		105	67	35	332	1,963
Wilmington General Hospital+ao Gen	NPAasn		170	117	43	1,223	4,383

Related Institutions

Marshallton, 1,500—New Castle							
Sunnybrook Cottage ThChil	NPAasn		22	20	..	...	14
Stockley, 68—Sussex							
Delaware Colony MeDe	State		503	459	..	...	31

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Washington, 663,091							
Central Dispensary and Emergency Hospital+ao Gen	NPAasn		250	224	..	...	7,107
Children's Hospital+ao Chil	NPAasn		210	151	..	...	7,906
Columbia Hospital for Women and Lying-In Asylum+ao GynMat	NPAasn		127	113	90	2,526	4,204

DISTRICT OF COLUMBIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
District of Columbia Reformatory Hospital (Lorton, Va. P.O.)	Inst	City	120	56	..	...	2,412
Doctors Hospital+ao	Gen	Corp	230	199	65	1,205	7,730
Eastern Dispensary and Casualty Hospital	Gen	NPAasn	147	96	12	23	3,463
Episcopal Eye, Ear and Throat Hospital+ao	ENT	Church	105	72	..	...	6,886
Freedmen's Hospital+ao	Gen	USPHS	402	288	48	1,271	5,438
Gallinger Municipal Hospital+ao	Gen	City	1,066	735	54	2,413	10,185
Garfield Memorial Hosp.+ao	TB	City	326	303	..	...	804
Georgetown University Hospital+ao	Gen	NPAasn	339	352	98	2,425	9,659
George Washington University Hospital+ao	Gen	NPAasn	223	161	51	1,342	6,224
National Homeopathic Hospital+ao	Gen	NPAasn	92	74	22	636	2,773
Providence Hospital+ao	Gen	NPAasn	60	45	18	375	1,524
St. Elizabeths Hospital+ao	Gen	Church	275	237	50	1,859	8,519
St. Elizabeths Hospital+ao Ment	Gen	USPHS	454	422	2	2	2,201
Sibley Memorial Hosp.+ao	Gen	USPHS	7,017	6,524	..	...	1,256
Tuberculosis Sanatorium+ao	Gen	Church	253	200	96	2,136	8,837
Glenn Dale Sanatorium, Glenn Dale, Md. P.O.).....	TB	City	686	654	..	...	570
U. S. Naval Hospital+ao	Gen	Navy	205	186	..	...	2,177
U. S. Soldiers' Home Hosp.+ao	InstGen	Fed	466	200	..	...	1,472
Veterans Admin. Facility+ao	Gen	Vet	327	302	..	...	4,685
Walter Reed General Hospital+ao	Gen	Army	1,400	1,035	21	170	8,467
Washington Sanitarium and Hospital+ao	Gen	Church	188	157	22	560	3,940
Related Institutions							
Washington, 663,091							
District Training School (Laurel, Md. P.O.)	MeDe	City	720	604	..	4	98
Florence Crittenton Home. Mat Home for the Aged and Infirm	Mat	NPAasn	50	49	46	98	111
Kendall House Sanitarium. Conv	Inst	City	150	130	..	...	150
National Training School for Boys Hospital	Inst	Indiv	22	10	..	...	60
Washington Home for Incurables	Inst	Fed	30	13	..	...	2,168
Washington Home for Incurables	Incur	NPAasn	163	174	..	...	81

FLORIDA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Areadin, 4,035—DeSoto							
Areadin General Hospital... Gen	Corp		26	10	3	157	688
Bartow, 6,158—Polk							
Bartow General Hospital.... Gen	City		15	6	3	75	660
Polk County Hospital Gen	County		60	51	3	...	1,140
Bay Pines, —Pinellas							
Veterans Admin. Facility+ao Gen	Vet		444	401	..	...	3,522
Bradenton, 7,444—Manatee							
Bradenton General Hospital. Gen	Part		18	7	7	53	363
Century, 2,000—Escambia							
Turkeyville Hospital Gen	NPAasn		35	15	4	48	615
Chattahoochee, 3,000—Gadsden							
Florida State Hospital+ao Ment	State		5,050	4,823	..	...	2,330
Clearwater, 10,136—Pinellas							
Morton P. Plant Hospital+ao Gen	NPAasn		50	18	10	103	1,073
Coral Gables, 8,294—Dade							
University Hospital Gen	Corp		35	22	16	200	1,290
Dade City, 2,561—Pasco							
Jackson Memorial Hospital. Gen	County		20	5	3	35	258
Daytona Beach, 22,554—Volusia							
Halifax District Hospital, Gen	NPAasn		145	56	35	177	1,766
De Funiak Springs, 2,570—Walton							
Lakeside Clinic Gen	Indiv		10	6	7	130	262
De Land, 7,041—Volusia							
De Land Memorial Hospital. Gen	NPAasn		20	6	8	60	340
Dunedin, 1,758—Pinellas							
Mense Hospital Gen	NPAasn		24	8	4	44	408
Eustis, 2,930—Lake							
Lake County Medical Center Gen	NPAasn		63	30	10	149	1,069
Fort Barrnneas, 750—Escambia							
Station Hospital Gen	Army		90	64	..	...	1,752
Fort Lauderdale, 17,696—Broward							
Broward General Hospital.. Gen	City		55	32	10	212	1,849
Fort Myers, 10,604—Lee							
Jones-Walker Hospital..... Unit of Lee Memorial Hospital			24	17	4	144	992
Lee Memorial Hospital..... Gen	NPAasn		24	17	4	144	992
Fort Pierce, 6,940—St. Lucie							
Fort Pierce Memorial Hosp. Gen	NPAasn		40	22	7	128	779
Gainesville, 13,757—Alachua							
Alachua County Hospital+ao Gen	County		65	42	10	320	1,850
University of Florida Infirmary+ao Inst	State		45	11	..	...	1,169
Hollywood, 6,239—Broward							
Hollywood Hospital Gen	Corp		28	14	6	120	957
Jacksonville, 173,065—Duval							
Brewster Hospital+ao Gen	Church		80	57	15	291	1,675
Duval County Hospital+ao Gen	County		225	177	15	603	4,220

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
St. Luke's Hospital*+o	Gen	NPAssn	21	13	..	..	26
St. Vincent's Hospital*+o	Gen	NPAssn	50	50	..	..	126
St. Vincent's Hospital*+o	Gen	NPAssn	8	3	..	..	14
St. Vincent's Hospital*+o	Gen	NPAssn	50	32	10	129	1,495
St. Vincent's Hospital*+o	Gen	NPAssn	182	132	25	1,214	5,921
St. Vincent's Hospital*+o	Gen	Church	220	221	50	1,307	7,295
Key West, 12,927—Monroe	Gen	USPHS	65	48	..	1	903
U. S. Marine Hospital*+o	Gen	USPHS	65	48	..	1	903
Kissimmee, 3,225—Oseola	Gen	Indiv	40	17	5	52	1,046
Oseola Hospital	Gen	Indiv	40	17	5	52	1,046
Lake City, 5,836—Columbia	Gen	City	35	10	6	127	910
Lake Shore Hospital	Gen	Vet	353	288	..	..	2,316
Veterans Admin. Facility	Gen	Vet	353	288	..	..	2,316
Lakeland, 22,063—Polk	Gen	City	84	44	16	305	1,665
Morrell Memorial Hospital	Gen	City	84	44	16	305	1,665
Lake Wales, 5,024—Polk	Gen	NPAssn	25	6	7	55	338
Lake Wales Hospital	Gen	NPAssn	25	6	7	55	338
Leesburg, 4,687—Lake	Gen	Indiv	40	16	4	58	616
Theresa Holland Hospital	Gen	Indiv	40	16	4	58	616
Manatee, 3,595—Manatee	Gen	County	65	2	8	170	706
Manatee County Hospital	Gen	County	65	2	8	170	706
Riverside Hospital	Gen	Indiv	20	11	3	49	497
Marianna, 5,079—Jackson	Gen	Part	16	5	4	30	315
Doctor's Hospital	Gen	Part	16	5	4	30	315
Melbourne, 2,622—Brevard	Gen	City	25	10	5	56	369
Brevard Hospital	Gen	City	25	10	5	56	369
Miami, 172,172—Dade	Gen	NPAssn	40	10	6	132	464
Christian Hospital	Gen	NPAssn	40	10	6	132	464
Dade County Hospital	Gen	County	137	68	20	544	3,121
Dade County Hospital	Gen	County	54	27	..	..	121
James M. Jackson Memorial Hospital*+o	Gen	City	426	342	50	1,705	14,478
James M. Jackson Memorial Hospital*+o	Gen	City	49	42	..	..	193
Miami Retreat	Gen	NPAssn	85	58	..	..	453
Miami Riverside Hospital	Gen	Indiv	44	20	10	200	670
National Children's Cardiac Home	ChilCard	NPAssn	24	24	..	..	24
Sun-Ray Park Health Resort	N&M	Corp	75	20	..	..	309
Victoria Hospital	Gen	Indiv	75	44	22	561	2,205
Miami Beach, 28,012—Dade	Gen	Corp	55	20	6	22	1,021
Miami Beach Hospital	Gen	Corp	55	20	6	22	1,021
St. Francis Hospital	Gen	Church	150	69	12	334	3,333
Miami Springs, 899—Dade	Gen	NPAssn	105	22	..	..	335
Miami-Battle Creek Sanatorium	Gen	NPAssn	105	22	..	..	335
Ocala, 8,986—Marion	Gen	CyCo	85	30	10	182	1,283
Munroe Memorial Hospital	Gen	CyCo	85	30	10	182	1,283
Orlando, 86,736—Orange	Gen	Church	130	70	10	208	2,253
Florida Sanatorium and Hospital	Gen	Church	130	70	10	208	2,253
Florida State Tuberculosis Sanatorium	Gen	State	400	388	..	..	306
Orange General Hospital	Gen	NPAssn	170	118	22	409	4,041
Palatka, 7,140—Putnam	Gen	Indiv	20	9	4	86	597
Glendale Hospital	Gen	Indiv	20	9	4	86	597
Mary Lawson Sanatorium	Gen	Indiv	50	16	6	69	244
Panama City, 11,610—Bay	Gen	Indiv	25	10	6	90	570
Lisby Hospital	Gen	NPAssn	13	5	5	109	473
Panama City Hospital	Gen	NPAssn	13	5	5	109	473
Pensacola, 37,449—Escambia	Gen	CyCo	66	48	..	..	76
Escambia County Tuberculosis Hospital	Gen	CyCo	66	48	..	..	76
Quincy, 3,888—Gadsden	Gen	NPAssn	35	12	4	67	645
Gadsden County Hospital	Gen	NPAssn	35	12	4	67	645
St. Augustine, 12,000—St. Johns	Gen	NPAssn	55	44	5	122	1,397
East Coast Hospital	Gen	NPAssn	55	44	5	122	1,397
Flagler Hospital	Gen	NPAssn	66	29	8	154	923
St. Petersburg, 60,812—Pinellas	Gen	NPAssn	35	21	..	..	203
American Legion Hospital for Crippled Children	Orth	NPAssn	46	20	4	14	908
St. Anthony's Hospital	Gen	City	192	101	16	407	5,794
St. Anthony's Hospital	Gen	Church	100	45	15	153	1,763
St. Anthony's Hospital	Gen	Unit of St. Anthony's Hospital	142	95	..	..	1,252
Hospital	Gen	NPAssn	22	10	6	92	606
Sarasota, 11,141—Sarasota	Gen	Indiv	20	10	5	14	650
Joseph Halton Hospital	Gen	City	50	20	10	177	1,233
Sarasota Hospital	Gen	City	50	20	10	177	1,233
Stuart, 2,438—Martin	Gen	Indiv	30	10	7	28	426
Martin County Hospital	Gen	Indiv	16	7	3	97	620
Tallahassee, 16,240—Leon	Gen	NPAssn	29	12	8	34	408
Johnston's Sanatorium	Gen	Indiv	31	20	7	206	851
Tampa, 108,391—Hillsborough	Gen	NPAssn	65	39	8	170	1,049
Centro Asturiano Hospital	Gen	NPAssn	65	39	8	170	1,049
Clara Frye Tampa Municipal Negro Hospital	Gen	City	72	34	8	154	2,499
Hillsborough County Home and Hospital	InstGen	County	248	207	9	427	2,448
St. Joseph's Hospital	Gen	Church	63	45	15	395	2,135
Tampa Municipal Hospital	Gen	City	259	165	29	920	7,434
Umatilla, 1,149—Lake	Gen	NPAssn	75	44	..	..	153
Harry Anna Crippled Children's Home	Orth	NPAssn	75	44	..	..	153
Vero Beach, 3,050—Indian River	Gen	Indiv	21	6	5	42	343
Indian River Hospital	Gen	Indiv	21	6	5	42	343

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
West Palm Beach, 33,693—Palm Beach	Gen	NPAssn	117	76	15	316	2,931
Good Samaritan Hospital	Gen	NPAssn	35	25	4	36	746
Pine Ridge Hospital	Gen	Church	100	39	15	271	1,421
St. Mary's Hospital	Gen	Church	100	39	15	271	1,421
Winter Haven, 6,199—Polk	Gen	NPAssn	25	20	6	92	730
Winter Haven Hospital	Gen	NPAssn	25	20	6	92	730
Related Institutions							
Daytona Beach, 22,584—Volusia	Gen	Indiv	10	4	2	9	110
Daytona Beach Sanatorium	Gen	Indiv	10	4	2	9	110
Fort Lauderdale, 17,906—Broward	Gen	NPAssn	22	10	5	69	237
Provident Hospital	Gen	NPAssn	22	10	5	69	237
Gainesville, 13,757—Alachua	Gen	MeDe	577	565	..	..	34
Florida Farm Colony	Gen	MeDe	577	565	..	..	34
Jacksonville, 173,065—Duval	Gen	Inst	20	5	..	..	230
Dr. Miller's Sanatorium	Gen	Inst	20	5	..	..	230
Largo, 1,031—Pinellas	Gen	Inst	110	97	..	..	182
Pinellas County Home	Gen	Inst	110	97	..	..	182
Miami, 172,172—Dade	Gen	Inst	35	6	8	96	293
Edgewater Hospital	Gen	Inst	35	6	8	96	293
Raiford, 472—Union	Gen	Inst	85	60	..	..	1,275
Florida State Farm Hosp.	Gen	Inst	85	60	..	..	1,275
St. Petersburg, 60,812—Pinellas	Gen	Inst	40	14	..	..	182
Earle Restorium	Gen	Inst	40	14	..	..	182
Florence Crittenton Home	Gen	Inst	28	22	18	46	63
Tallahassee, 16,240—Leon	Gen	Inst	43	33	2	16	953
Florida Agricultural and Mechanical College Hosp.	Gen	Inst	43	33	2	16	953
West Palm Beach, 33,693—Palm Beach	Gen	Inst	12	9	..	..	45
Palm Beach County Tuberculosis Sanatorium for Negroes	Gen	Inst	12	9	..	..	45

GEORGIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Albany, 19,055—Dougherty	Gen	NPAssn	56	38	8	288	2,903
Phoebe Putney Memorial Hospital	Gen	NPAssn	56	38	8	288	2,903
Alto, 217—Habersham	Gen	State	605	410	..	..	797
State Tuberculosis Sanatorium	Gen	State	605	410	..	..	797
Americus, 9,281—Sumter	Gen	NPAssn	35	19	5	110	716
Americus and Sumter County Hospital	Gen	NPAssn	35	19	5	110	716
Athens, 20,650—Clarke	Gen	County	80	39	10	110	1,654
Athens General Hospital	Gen	County	80	39	10	110	1,654
St. Mary's Hospital	Gen	Church	63	45	10	179	1,633
Atlanta, 302,288—Fulton	Gen	City	30	29	..	..	559
Albert Steiner Clinic for Cancer and Allied Diseases	Gen	City	256	246	..	..	162
Battle Hill Sanatorium	Gen	City	25	15	..	..	510
Blackman Sanatorium	Gen	Indiv	25	15	..	..	510
Crawford W. Long Memorial Hospital	Gen	NPAssn	205	196	45	1,533	10,018
Georgia Baptist Hospital	Gen	Church	164	160	30	727	6,292
Grady Hospital	Gen	City	618	486	78	4,064	21,737
Grady Hospital, Emory University Division	Gen	Unit of Grady Hospital	618	486	78	4,064	21,737
Henrietta Eggleston Hospital for Children	Chil	NPAssn	44	36	..	..	1,022
Jesse Parker Williams Hosp.	Gen	NPAssn	30	..	..	..	Estab. 1911
Joseph B. Whitehead Memorial Hospital	Gen	State	26	11	..	..	622
Piedmont Hospital	Gen	NPAssn	122	115	15	497	4,694
Ponce de Leon Eye, Ear and Throat Infirmary	ENT	Indiv	25	..	..	..	4,710
St. Joseph Infirmary	Gen	Church	130	126	22	685	2,712
U. S. Penitentiary Hospital	Inst	USPHS	148	74	..	..	2,195
Veterans Admin. Facility	Gen	Vet	312	294	..	..	2,195
William A. Harris Memorial Hospital	Gen	Indiv	28	13	2	14	699
Augusta, 65,919—Richmond	Gen	City	200	280	45	1,220	10,267
University Hospital	Gen	City	200	280	45	1,220	10,267
Veterans Admin. Facility	Ment	Vet	1,061	1,064	..	..	653
Bainbridge, 6,352—Deer	Gen	Indiv	32	9	4	61	657
Bainbridge Hospital	Gen	Part	25	12	6	93	675
Riverside Hospital	Gen	Part	25	12	6	93	675
Barwick, 409—Brooks	Gen	Indiv	14	3	2	25	499
Sanchez Private Sanatorium	Gen	Indiv	14	3	2	25	499
Brunswick, 15,035—Glynn	Gen	City	60	39	10	232	1,211
Brunswick City Hospital	Gen	City	60	39	10	232	1,211
Butler, 1,093—Taylor	Gen	Indiv	18	4	2	49	256
Montgomery Hospital	Gen	Indiv	18	4	2	49	256
Cairo, 4,633—Grady	Gen	Indiv	25	10	4	51	527
Cairo Hospital	Gen	Indiv	25	10	4	51	527
Calhoun, 2,955—Gordon	Gen	Indiv	25	7	2	149	599
Calhoun Hospital	Gen	Indiv	25	7	2	149	599
.. .. .	Gen	Corp	25	..	..	..	No data supplied
.. .. .	Gen	Indiv	12	..	..	..	122
.. .. .	Gen	Indiv	8	..	..	..	217
.. .. .	Gen	Indiv	10	..	..	..	102
.. .. .	Gen	City	250	173	26	591	6,000

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
Cuthbert, 3,447—Randolph Patterson Hospital ¹	Gen	Indiv	40	17	4	55	758
Dalton, 10,448—Winfield Hamilton Memorial Hospital	Gen	AP Assn	35	20	6	300	1,480
Decatur, 16,561—De Kalb Scottish Rite Hospital for Crippled Children ⁴	Orth	AP Assn	60	59			315
Donaldsonville, 1,718—Seminole Donalsonville Hospital	Gen	Part	30	12	6	174	830
Douglas, 5,175—Coffee Douglas Hospital	Gen	City	32	10	3	108	826
Dublin, 7,814—Laurens Clayton Sanatorium	Gen	Corp	55	26	5	116	1,240
Coleman Hospital	Gen	Indiv	20	4	116	998	
Hicks Hospital	Gen	Indiv	25	8	2	6	501
Thompson Sanatorium	Gen	Indiv	14	7	3	20	350
Eastman, 3,311—Dodge Clinie Hospital	Gen	Indiv	14	5	2	28	716
Coleman Sanatorium ⁴	Gen	Indiv	9	9	4	14	611
Flbertoo, 6,188—Flbert Elbert County Hospital	Gen	Cy Co	10	4	3	45	295
Thompson Johnson Hospital	Gen	Corp	10	1	1	67	452
Emory University, 2,400—De Kalb Emory University Hosp ⁴	Gen	AP Assn	223	199	37	809	6,764
Fort Benning, —Chattahoochee Station Hospital ¹	Gen	Army	64	476	15	191	12,805
Fort McPherson (Atlanta P O), —Fulton Station Hospital ¹	Gen	Army	247	140	4	31	3,901
Fort Oglethorpe, 800—Catoosa Station Hospital ¹	Gen	Army	271	164	5	20	2,100
Fort Screven, —Chatham Station Hospital	Gen	Army	50	36	1	12	912
Guineville, 10,247—Hall Downey Hospital	Gen	Corp	52	31	6	151	1,708
Hall County Memorial Hosp	Gen	County	52	15	4	60	656
Griffin, 13,225—Spalding R F Strickland and Son Memorial Hospital ¹	Gen	Indiv	45	27	5	111	1,278
Hawkinsville, 3,000—Pulaski R J Taylor Memorial Hosp	Gen	AP Assn	43	10	5	33	440
Homerville, 1,727—Clinch Huey Hospital	Gen	Indiv	14	10	2	37	1,122
Hoschton, 364—Jackson Allen Clinic and Hospital	Gen	Part	14	7	2	36	369
Jasper, 576—Pickens Roper Hospital	Gen	Indiv	0	6	3	67	322
Jesup, 2,003—Wayne Colvin Ritch Hospital	Gen	Part	27	14	5	167	865
La Grange, 21,983—Troup City County Hospital ¹	Gen	Cy Co	62	34	6	188	1,573
Macon, 57,805—Bibb Clinie Hospital	Gen	Corp	26	20	4	100	1,280
Macon Hospital ⁴	Gen	Cy Co	204	16	40	813	6,101
Middle Georgia Hospital ¹	Gen	Corp	50	34	13	280	2,082
Oglethorpe Private Infirmary ⁴	Gen	Corp	36	24	4	89	1,140
St Luke Hospital	Gen	AP Assn	30	10	5	25	210
Marietta, 8,667—Colb Marietta Hospital	Gen	Corp	26	14	6	110	882
Metter, 1,825—Candler Kennedy Memorial Hospital	Gen	Part	25	12	3	24	554
Milledgeville, 6,778—Baldwin Allen's Invalid Home	N&M	Indiv	150	98			431
Baldwin Memorial Hospital ¹	Gen	Indiv	70	24	15	127	1,320
Milledgeville State Hospital ¹	Gen	State	8,000	7,779			1,741
Scott Hospital	Gen	Indiv	25	20	4	20	396
Millen, 2,820—Jenkins Millen Hospital	Gen	Indiv	22	8	4	27	514
Mulkey Hospital	Gen	Indiv	20	7	5	42	462
Monroe, 4,168—Walton Walton County Hospital	Gen	Cy Co	17	5	4	31	332
Montezuma, 2,346—Macon Riverside Sanatorium	Gen	Part	20	6	4	36	400
Moultrie, 10,147—Colquitt Vereen Memorial Hospital	Gen	AP Assn	50	17	6	91	1,012
Nashville, 2,449—Berrien Askew Memorial Hospital	Gen	Indiv	11	4	3	82	270
Ocella, 2,124—Irwin Ocella Hospital	Gen	Part	20	8	5	100	612
Quitman, 4,450—Brooks Brooks County Hospital	Gen	Cy Co	32	11	4	74	629
Reidsville, 800—Tuttnall Jekes Hospital	Gen	Indiv	13	8	2	25	386
Rome, 26,282—Floyd Harbia Hospital	Gen	Corp	60	78	12	240	2,990
McCall Hospital	Gen	Corp	73	46	12	571	3,800
Royston, 1,549—Franklin Brown's Hospital	Gen	Indiv	20	10	2		360
Central of Georgia Railway Hospital ¹	Indus	AP Assn	68	30	7	97	1,215
Charity Hospital	Gen	AP Assn	60	47			2,960
Georgia Infirmary	Gen	AP Assn	60	60	14	220	2,841
Oglethorpe Sanatorium	Gen	Indiv	50	33	8	123	1,790
St Joseph Hospital ¹	Gen	Church	100	83	15	404	2,877
Cellular Hospital	Gen	AP Assn	60	65	20	549	2,633
U S Marine Hospital ¹	Gen	USPHS	150	107			1,461
Warren A Candler Hosp ¹	Gen	Church	86	71	14	509	2,744
Smyrna, 1,440—Cobb Dr Brawner's Sanatorium	N&M	Indiv	40	30			460

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
Statesboro, 5,028—Bulloch Bulloch County Hospital	Gen	County	40	12	6	68	727
Van Buren's Sanatorium	Gen	Indiv	20	15		20	200
Swainsboro, 3,575—Emanuel Franklin Hospital	Gen	Indiv	20	6	2	34	587
Thomasville, 12,683—Thomas John D Arehbold Memorial Hospital ¹	Gen	AP Assn	110	89	12	167	3,027
Tifton, 5,228—Tift Tift County Hospital	Gen	County	32	12	7	59	606
Tooea, 5,494—Stephens Stephens County Hospital	Gen	County	25	13	6	251	1,282
Trion, 3,800—Chattooga Regiel Hospital	Gen	Indiv	40	21	5	303	1,400
Valdosta, 15,590—Lowndes Frank Bird Hospital	Gen	Indiv	22	9	3	51	465
Little Griffith Owens Saunders Hospital	Gen	AP Assn	54	21	5	197	2,200
Valdalia, 4,100—Toombs Bethany Home Hospital	Inst	Church	32	No data supplied			
City Hospital	Gen	Indiv	14	1	3	31	240
Warm Springs, 608—Meriwether Georgia Warm Springs Foundation ¹	Orth	AP Assn	110	89			378
Washington, 3,537—Wilkes Washington General Hosp	Gen	City	76	21	8	157	1,209
Waycross, 16,763—Ware Atlantic Coast Line Hosp ¹	Indus	AP Assn	72	39			1,703
Ware County Hospital	Gen	County	70	54	8	377	2,002
West Point, 3,501—Troup Valley Hospital	Gen	AP Assn	27	20	4	96	741
Related Institutions							
Atlanta, 302,288—Tulton Dwell's Infirmary	Gen	Indiv	15	5	2	16	191
Florence Crittenton Home	Nat	AP Assn	26	24	10	44	46
Georgia Sanatorium	Gen	Indiv	5	2	2	8	70
Our Lady of Perpetual Help Free Cancer Home	Cancer	Church	50	35			131
Social Disease Hospital	Ven	City	40	17			402
Columbus, 53,280—Muscogee Muscogee County Tuberculosis Hospital	TB	County	48	22			48
Cordele, 7,079—Crisp Gillespie Hospital	Gen	Church	20	9	4	16	296
Gracewood, 500—Richmond Georgia Training School for Mental Defectives	MeDe	State	460	306			176
Lyons, 1,900—Toombs Aiken Hospital	Gen	Indiv	8	5	3	20	201
Summerville, 1,308—Chattooga Summerville Trion Hospital	Gen	Corp	20	6	5		450

IDAHO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
American Falls, 1,439—Power Schultz Memorial Hospital	Gen	County	25	12	8	111	721
Blackfoot, 3,681—Bingham State Hospital, South	Vent	State	600	617			212
Boise, 26,130—Ada St Alphonsus Hospital ¹	Gen	Church	148	119	20	384	2,660
St Lukes Hospital ¹	Gen	Church	115	97	20	363	3,357
Veterans Admin Facility ¹	Gen	Vet	174	134			1,218
Bonniers Ferry, 1,345—Boundary Bonniers Ferry Hospital	Geo	Corp	25	8	8	96	286
Burley, 5,329—Cassia Cottage Hospital	Gen	Corp	17	11	4	88	693
Caldwell, 7,273—Canyon Caldwell Sanatorium	Gen	Part	22	8	8	92	461
Coeur d'Alene, 10,049—Kootenai Coeur d'Alene Hospital	Gen	AP Assn	25	9	1	4	60
Cottonwood, 673—Idaho Onr Lady of Consolation Hospital	Gen	Church	32	19	5	62	554
Fort Hall, 100—Bingham Fort Hall Indian Agency Hospital	Gen	IA	16	12	4	50	307
Gooding, 2,365—Gooding Gooding County Hospital	Gen	AP Assn	16	8	8	117	519
Grangeville, 1,929—Idaho General Hospital	Gen	Corp	20	6	6	34	188
Halley, 1,443—Blaine Halley Chiolel Hospital	Gen	Indiv	20	13	6	54	620
Idaho Falls, 15,624—Bonneville Idaho Falls Latter Day Saints' Hospital ¹	Gen	Church	100	84	39	829	3,711
Kellogg, 4,235—Shoshone Wardner Hospital	Gen	Part	35	26	7	154	1,702
Idapwal, 476—Nez Perce Fort Lapwai Sanatorium ¹	TB	IA	145	111			176
Jewston, 10,045—Nez Perce St Joseph's Hospital ¹	Gen	Church	135	90	20	375	2,101
White Hospital	Gen	AP Assn	25	12	4	38	405
Valad City, 2,731—Oncida Oncida Hospital	Gen	County	20	9	7	114	409

IDAHO—Continued

Hospitals and Saaatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions †
Moscow, 6,014—Latah							
Gritman Memorial Hospital. Gen	NPAssn	State	27	19	12	199	887
University of Idaho In- firmary	Inst	State	30	13	..	...	817
Nampa, 12,149—Canyon							
Mersey Hospital*..... Gen	Church	Church	75	43	15	294	1,621
Nzarenne Missionary Sanitarium and Institute (Samaritan Hospital Di- vision)*	Gen	Church	50	25	6	101	944
Orofino, 1,602—Clearwater							
Orofino Hospital	Part	Part	38	21	4	71	609
State Hospital, North..... Ment	State	State	429	359	..	...	106
Pocatello, 18,133—Bannock							
Pocatello General Hospital*..... Gen	CyCo	Church	75	53	16	394	2,182
St. Anthony Mersey Hosp.*..... Gen	Church	Church	100	37	20	369	1,581
Potlatch, 800—Latah							
Potlatch Hospital	Part	Part	20	7	3	44	343
Preston, 4,236—Franklin							
General Memorial Hospital.. Gen	NPAssn	NPAssn	17	13	9	161	464
Rexburg, 3,437—Madison							
Harlo B. Rigby Hospital.... Gen	Indiv	Indiv	14	8	6	76	490
Rupert, 3,167—Mindoka							
Rupert General Hospital.... Gen	Indiv	Indiv	15	6	3	49	328
St. Maries, 2,234—Benewah							
St. Maries Hospital..... Gen	Part	Part	25	12	3	37	421
Sandpoint, 4,350—Bonner							
Community Hospital	NPAssn	NPAssn	25	14	6	60	170
Graham Hospital	Indiv	Indiv	15	8	4	103	363
Soda Springs, 1,087—Caribou							
Caribou County Hospital... Gen	County	County	36	17	7	49	950
Twin Falls, 11,551—Twin Falls							
Twin Falls County General Hospital	Gen	County	85	87	28	673	3,063
Wallace, 3,839—Shoshone							
Providence Hospital*..... Gen	Church	Church	50	28	12	203	1,186
Wallace Hospital	Part	Part	40	No data supplied			
Wendell, 1,001—Gooding							
St. Valentine's Hospital.... Gen	Church	Church	25	15	9	102	615

Related Institutions

Boise, 26,130—Ada							
Salvation Army Women's Home and Hospital..... Mat	Church	Church	21	19	17	108	243
Nampa, 12,149—Canyon							
State School and Colony... McDe	State	State	502	555	..	...	41
Priest River, 1,056—Bonner							
Priest River Hospital..... Gen	Indiv	Indiv	10	3	2	11	89

ILLINOIS

Hospitals and Saaatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions †
Aledo, 2,593—Mercer							
Stites-Conway Hospital..... Gen	Part	Part	14	6	4	91	432
Alton, 31,255—Madison							
Alton Memorial Hospital*..... Gen	Church	Church	90	95	15	636	3,531
Alton State Hospital..... Ment	State	State	1,822	1,720	..	...	923
St. Anthony's Infirmary and Sanitarium	Gen	Church	75	60	..	...	1,330
St. Joseph's Hospital*..... Gen	Church	Church	125	112	25	543	4,087
Ambly, 1,956—Lee							
Ambly Public Hospital..... Gen	NPAssn	NPAssn	13	10	4	55	250
Annn, 4,092—Union							
Annn State Hospital..... Ment	State	State	2,324	2,225	..	...	837
Hale-Willard Memorial Hosp. Gen	City	City	16	9	4	70	348
Aurora, 47,170—Kane							
Copley Hospital*..... Gen	NPAssn	NPAssn	100	101	20	499	3,803
Kane County Springbrook Sanitarium	TB	County	85	81	..	...	70
Merseyville Sanitarium	N&M	Church	150	145	..	...	284
St. Charles Hospital*..... Gen	Church	Church	120	90	25	451	2,890
St. Joseph Mersey Hospital*..... Gen	Church	Church	125	130	30	645	3,551
Avon, 803—Fulton							
Saunders Hospital	NPAssn	NPAssn	12	6	4	73	170
Batavia, 5,101—Kne							
Bellevue Place Sanitarium... N&M	Corp	Corp	40	27	..	...	17
Bellevue Hospital..... TB	NPAssn	NPAssn	85	52	..	...	78
Belvidere, 8,094—Boone							
Highland Hospital	NPAssn	NPAssn	30	19	10	139	776
St. Joseph's Hospital..... Gen	Church	Church	25	17	9	133	796
Benton, 7,372—Franklin							
Moore Hospital	Indiv	Indiv	25	12	1	37	593
Berwyn, 48,451—Cook							
Berwyn Hospital	NPAssn	NPAssn	84	70	22	761	3,060
Bloomington, 52,868—McLean							
Menonite Hospital*..... Gen	Church	Church	65	62	15	458	2,185
St. Joseph's Hospital*..... Gen	Church	Church	203	140	22	499	3,820
Blue Island, 16,638—Cook							
St. Francis Hospital*..... Gen	Church	Church	85	65	15	726	2,923
Breese, 2,206—Clinton							
St. Joseph Hospital..... Gen	Church	Church	40	21	9	190	763
Bushnell, 2,906—McDonough							
Elm Grove Sanatorium	TB	County	36	20	..	...	56

ILLINOIS—Continued

Hospitals and Saaatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions †
Cairo, 14,407—Alexander							
Alexander County Tubercu- losis Sanatorium	TB	County	100	70	..	...	161
St. Mary's Infirmary*..... Gen	Church	Church	100	56	12	266	2,447
Canton, 11,577—Fulton							
Graham Hospital*..... Gen	NPAssn	NPAssn	65	58	20	463	2,841
Carbondale, 8,550—Jackson							
Holden Hospital	Gen	Church	78	30	12	123	1,500
Carlinville, 4,965—Macoupin							
Macoupin Hospital	Gen	Indiv	26	21	6	135	962
Centralia, 16,343—Marion							
St. Mary's Hospital..... Gen	Church	Church	70	62	15	600	3,308
Champaign, 23,302—Champaign							
Burnham City Hospital*..... Gen	City	City	136	80	24	525	3,370
Charleston, 8,197—Coles							
M. A. Montgomery Memorial Sanitarium	Gen	NPAssn	24	11	5	46	461
Oakwood Hospital	Gen	Indiv	20	6	3	32	207
Chester, 5,110—Randolph							
Chester Hospital	Gen	NPAssn	12	6	3	33	274
Chicago, 3,396,808—Cook							
Albert Merritt Billings Hosp.. Unit	of University of Chicago Clinics	Church	273	218	..	...	4,827
Alexian Brothers Hosp.*..... Gen	NPAssn	NPAssn	175	89	10	309	4,003
American Hospital*..... Gen	Church	Church	275	192	25	672	6,132
Augustana Hospital*..... Gen	NPAssn	NPAssn	100	61	25	505	2,880
Belmont Community Hosp.*..... Gen	Church	Church	25	13	..	...	319
Bethany Home Hospital..... Gen	Church	Church	51	32	23	322	1,609
Bethany Sanitarium and Hos- pital*..... Gen	Church	Church	51	32	23	322	1,609
Bohs Roberts Memorial Hos- pital for Children..... Unit	of University of Chicago Clinics	Indiv	40	9	6	59	323
Burns Hospital	Gen	Indiv	40	9	6	59	323
Chicago Eye, Ear, Nose and Throat Hospital	ENT	Corp	45	11	..	...	772
Chicago Fresh Air Hospital TB	NPAssn	NPAssn	39	21	..	...	133
Chicago Lying-in Hospital of the University of Chi- cago*..... Unit	of University of Chicago Clinics	NPAssn	88	65	20	324	2,649
Chicago Memorial Hosp.*..... Gen	State	State	4,472	4,562	..	...	1,473
Chicago State Hospital*..... Ment	State	State	4,472	4,562	..	...	1,473
Children's Memorial Hos- pital*..... Child	NPAssn	NPAssn	232	139	..	...	4,196
City of Chicago Municipal Tubercu- losis Sanitarium*..... City	City	City	1,210	1,192	..	...	2,074
Columbus Hospital*..... Gen	Church	Church	152	119	18	437	4,537
Cook County Children's Hos- pital..... Unit	of Cook County Hospital	City	3,300	2,963	225	5,022	60,531
Cook County Hospital*..... Gen	City	City	3,300	2,963	225	5,022	60,531
Cook County Psychopathic Hospital..... Unit	of Cook County Hospital	NPAssn	135	123	30	753	5,417
Edgewater Hospital*..... Gen	NPAssn	NPAssn	140	102	30	775	4,323
Englewood Hospital*..... Gen	Church	Church	180	153	60	1,099	8,123
Evangelical Hospital*..... Gen	Corp	Corp	60	42	16	341	2,125
Franklin Boulevard Hosp.*..... Gen	NPAssn	NPAssn	150	102	32	631	4,706
Garfield Park Community Hospital*..... Gen	NPAssn	NPAssn	232	101	45	1,021	6,810
Grant Hospital*..... Gen	NPAssn	NPAssn	100	71	20	337	3,046
Henrotin Hospital*..... Gen	Church	Church	125	101	36	1,090	4,623
Holy Cross Hospital*..... Gen	Church	Church	125	101	36	1,090	4,623
Home for Destitute Crippled Children..... Unit	of University of Chicago Clinics	Church	196	173	42	1,405	6,532
Hospital of St. Anthony de Padua*..... Gen	NPAssn	NPAssn	250	168	40	855	5,563
Illinois Central Hospital*..... Gen	Church	Church	196	173	42	1,405	6,532
Illinois Eye and Ear In- firmery*..... ENT	State	State	200	173	..	...	5,161
Illinois Masonic Hospital*..... Gen	NPAssn	NPAssn	159	116	30	674	4,065
Illinois Neuropsychiatric In- stitute*..... Ment	State	State	150	..	..	...	Estab. 1941
Illinois Surgical Institute for Children..... Unit	of Research and Educational Hosp.	Corp	175	89	40	537	3,327
Jackson Park Hospital*..... Gen	Geo	NPAssn	40	16	6	92	607
Kenner Hospital	Card	NPAssn	60	39	..	...	101
La Ruidra Jackson Park Sanitarium	Card	NPAssn	60	39	..	...	101
Lewis Memorial Maternity Hospital*..... Mat	Church	Church	117	57	117	1,833	2,172
Loretto Hospital*..... Gen	Church	Church	115	89	27	776	3,325
Lutheran Deaconess Home and Hospital*..... Gen	Church	Church	176	128	42	1,072	5,845
Martha Washington Hosp..... Gen	NPAssn	NPAssn	75	30	15	242	1,539
Mersey Hospital-Loyola Uni- versity Clinics*..... Gen	Church	Church	208	218	40	723	7,519
Michael Reese Hospital*..... Gen	NPAssn	NPAssn	592	465	71	1,947	15,517
Misericordia Hospital and Home for Infants*..... Mat	Church	Church	57	8	18	335	2,200
Mother Cabrini Memorial Hospital*..... Gen	Church	Church	120	94	20	551	4,172
Mt. Sinai Hospital*..... Gen	NPAssn	NPAssn	180	151	40	1,063	6,275
Municipal Contagious Disease Hospital*..... Iso	City	City	423	120	..	...	2,252
North Chicago Hospital..... Gen	NPAssn	NPAssn	50	30	14	599	1,689
Norwegian-American Hos- pital*..... Gen	NPAssn	NPAssn	170	116	45	1,679	6,519
Orthopaedic Institute..... See	Illinois Surgical Institute for Children	Corp	50	41	..	...	419
Parkway Sanitarium	N&M	Corp	50	41	..	...	419
Passavant Memorial Hos- pital*..... Gen	NPAssn	NPAssn	220	173	25	559	6,629
..... N&M	NPAssn	NPAssn	40	27	..	...	200
..... Gen	Church	Church	378	227	51	1,111	11,767
..... Gen	NPAssn	NPAssn	117	119	15	676	3,351

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Ravenswood Hospital*▲● .. Gen		NPAsso	153	133	50	1,215	5,632
Research and Educational Hospitals*▲	Geo	State	433	363	34	577	5,694
Roseland Community Hospital*▲● .. Gen		NPAssn	101	79	28	697	3,819
St. Aone's Hospital*▲● .. Gen		Church	300	217	60	1,947	8,009
St. Anthony de Padua Hosp. .. Gen	See Hospital of St. Anthony de Padua						
St. Bernard's Hospital*▲● .. Gen		Church	200	133	42	880	6,904
St. Elizabeth Hospital*▲● .. Gen		Church	241	240	66	1,557	8,866
St. George Hospital .. Gen		Church	100	42	..	..	2,124
St. Joseph Hospital*▲● .. Gen		Church	225	145	40	931	4,921
St. Luke's Hospital*▲● .. Geo		NPAssn	481	383	55	1,067	14,591
St. Mary of Nazareth Hospital*▲● .. Gen		Church	264	217	60	1,829	8,864
St. Vincent's Infant and Maternity Hospital*▲● .. MatCh		Church	290	181	20	378	910
Sarah Morris Hospital for Children .. Unit of Michael Reese Hospital							
Shrivers Hospital for Crippled Children*▲ .. Orth		NPAssn	60	60	..	..	231
South Chicago Community Hospital*▲ .. Gen		NPAssn	86	44	17	518	4,351
South Shore Hospital*▲● .. Gen		Corp	125	55	23	612	3,007
Streeter Community Hosp. .. Gen		NPAssn	20	12	..	..	165
Swedish Covenant Hosp.*▲● .. Gen		Church	171	133	54	1,437	5,475
U. S. Marine Hospital*▲● .. USPHS			301	198	..	..	2,750
University Hospital*▲● .. Gen		NPAssn	100	78	21	348	4,075
University of Chicago Clinics*▲	Geo	NPAssn	526	374	134	3,034	11,554
Walther Memorial Hosp.*▲● .. Gen		Church	160	115	36	789	5,767
Washington Boulevard Hospital*▲● .. Gen		NPAssn	100	63	6	149	2,287
Wesley Memorial Hosp.*▲● .. Gen		Church	550	230	35	319	3,811
Women and Children's Hospital*▲● .. Gen		NPAssn	89	55	32	659	2,341
Woodlawn Hospital*▲ .. Gen		NPAssn	125	85	20	421	4,031
Chicago Heights, 22,401—Cook							
St. James Hospital*▲ .. Gen		Church	100	72	20	566	3,825
Clinton, 6,331—De Witt							
Dr. John Warner Hospital .. Gen		City	28	18	4	151	866
Danville, 30,919—Vermilion							
Lake View Hospital*▲ .. Gen		NPAssn	146	108	24	374	3,461
St. Elizabeth Hospital*▲ .. Gen		Church	165	118	30	651	3,662
Vermilion County Tuberculosis Dispensary and Hospital .. TB		County	55	44	..	..	111
Veterans Admin. Facility*▲ .. Ment		Vet	1,668	1,688	..	..	605
Decatur, 59,305—Macon							
Decatur and Macon County Hospital*▲ .. Gen		NPAssn	140	117	25	721	3,952
Macon County Tuberculosis Sanatorium*▲ .. TB		County	80	63	..	..	117
St. Mary's Hospital .. Gen		Church	180	186	25	497	5,737
Wabash Employees' Hospital*▲ Indus		NPAssn	75	44	..	..	1,153
De Kalb, 9,146—De Kalb							
De Kalb County Tuberculosis Sanatorium .. TB		County	33	22	..	..	49
De Kalb Public Hospital*▲ .. Gen		City	40	26	9	189	873
St. Mary's Hospital*▲ .. Gen		Church	45	26	8	117	959
Des Plaines, 9,518—Cook							
Northwestern Hospital .. Gen		NPAssn	14	6	5	76	363
Dixon, 10,671—Lee							
Dixco Public Hospital*▲ .. Gen		NPAssn	60	43	17	423	1,588
Downey, —Lake							
Veterans Admin. Facility*▲ .. Ment		Vet	1,475	1,457	..	..	423
Dunning, —Cook							
Chicago State Hospital .. See Chicago							
Du Quoin, 7,615—Perry							
Marshall Brownig Hospital .. Gen		NPAssn	47	27	9	190	963
Dwight, 2,499—Livingston							
Veterans Admin. Facility*▲ .. Geo		Vet	218	190	..	..	1,533
East Moline, 12,359—Rock Island							
East Moline State Hospital .. Ment		State	2,226	2,151	..	..	794
East St. Louis, 75,609—St. Clair							
Christian Welfare Hosp.*▲ .. Gen		NPAssn	126	66	24	546	2,412
St. Mary's Hospital*▲● .. Geo		Church	232	145	36	747	4,310
Edwardsville, 8,008—Madison							
Madison County Sanatorium*▲ .. TB		County	90	84	..	..	80
Effingham, 6,180—Effingham							
St. Anthony's Hospital .. Gen		Church	91	73	15	276	1,424
Eldorado, 4,891—Saline							
Perrell Hospital .. Gen		Indiv	12	6	3	33	262
Elgin, 38,333—Kane							
Elgin State Hospital*▲ .. Ment		State	4,932	4,964	..	..	1,962
Resthaven Sanitarium .. N&M		Indiv	85	70	..	..	202
St. Joseph Hospital*▲ .. Gen		Church	104	59	20	340	2,276
Sheridan Hospital*▲ .. Gen		NPAssn	125	101	30	554	3,586
Elmhurst, 15,458—Du Page							
Elmhurst Community Hosp. Gen		NPAssn	90	86	20	537	3,134
Evans, 65,389—Cook							
Evans Community Hosp. Gen		NPAssn	30	10	5	21	347
Evans Hospital*▲● .. Gen		NPAssn	231	182	35	1,022	5,145
St. Francis Hospital*▲● .. Gen		Church	262	159	50	1,210	7,083
Evergreen Park, 8,313—Cook							
Little Company of Mary Hospital*▲● .. Gen		Church	175	100	63	1,810	7,384
Fairbury, 2,300—Livingston							
Fairbury Hospital .. Gen		NPAssn	11	8	5	125	465
Fort Sheridan, 2,600—Lake							
Station Hospital*▲ .. Gen		Army	160	149	6	27	3,263

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions †
Freeport, 22,366—Stephenson							
Deaconess Hospital▲○	Gen	NPAssn	85	53	18	391	2,091
St. Francis Hospital▲○.....	Gen	Church	92	65	16	299	2,326
Galesburg, 28,876—Knox							
Galesburg Cottage Hosp.▲○. Gen		NPAssn	92	62	22	402	2,933
St. Mary's Hospital.....	Gen	Church	100	79	15	323	2,382
Geneseo, 3,824—Henry							
J. C. Hammond City Hosp.▲ Gen		City	23	13	8	172	732
Geneva, 4,101—Kane							
Community Hospital▲	Gen	NPAssn	70	51	20	205	1,703
Gronite City, 22,974—Madison							
St. Elizabeth Hospital▲○.....	Gen	Church	104	75	16	576	3,130
Great Lakes, —Lake							
U. S. Naval Hospital▲.....	Gen	Navy	280	145	..	...	3,892
Harrisburg, 11,453—Saline							
Harrisburg Hospital	Gen	Corp	30	8	2	20	318
Lightner Hospital	Gen	Indiv	35	20	5	104	946
Harvard, 3,121—McHenry							
Harvard Community Hosp..	Gen	Part	21	15	8	138	488
Horvey, 17,878—Cook							
Ingalls Memorial Hospital▲. Gen		NPAssn	95	65	25	576	2,592
Herrin, 9,352—Williamson							
Herrin Hospital	Gen	Indiv	55	40	10	140	1,338
Highland, 3,820—Madison							
St. Joseph's Hospital.....	Gen	Church	68	52	12	243	1,439
Highland Park, 14,476—Lake							
Highland Park Hospital▲.....	Gen	NPAssn	50	31	17	242	1,232
Hillsboro, 4,514—Montgomery							
Hillsborn Hospital	Gen	NPAssn	39	26	5	107	718
Hines, —Cook							
Veterans Admin. Facility▲.....	Gen	Vet	1,556	1,623	..	...	10,051
Hinsdale, 7,336—Du Page							
Hinsdale Sanitarium and Hospital▲○	Gen	Church	100	56	15	256	1,720
Jacksonville, 19,844—Morgan							
Jacksonville State Hospital. Ment		State	3,406	3,189	..	...	800
Morgan County Tuberculosis Sanatorium "Oaklawn".....	TB	County	40	22	..	...	35
Norbury Sanatorium▲	N&M	Corp	125	85	..	...	172
Our Saviour's Hospital▲○.....	Gen	Church	75	46	12	162	1,489
Passavant Memorial Hos- pital▲○	Gen	Church	73	57	12	243	1,783
Joliet, 42,365—Will							
Illinois State Penitentiary Hospital	Inst	State	134	68	..	...	2,301
St. Joseph's Hospital▲○.....	Gen	Church	230	203	50	1,045	6,089
Silver Cross Hospital▲○.....	Gen	NPAssn	120	80	30	600	3,413
Will County Tuberculosis Sanatorium	TB	County	100	75	..	...	81
Kankakee, 22,241—Kankakee							
Kankakee State Hospital.....	Ment	State	4,171	4,138	..	...	1,114
St. Mary Hospital▲○.....	Gen	Church	153	63	22	636	3,888
Kenilworth, 2,935—Cook							
Kenilworth Sanitarium	N&M	Indiv	50	27	..	...	137
Kewanee, 16,901—Henry							
Kewanee Public Hospital▲○. Gen		NPAssn	54	33	12	173	1,118
St. Francis Hospital▲○.....	Gen	Church	56	55	13	255	1,260
Lake Forest, 6,865—Lake							
Alice Home Hospital.....	Gen	NPAssn	45	17	9	70	725
Lake Forest Hospital.....	Unit of Alice Home Hospital						
La Salle, 12,812—La Salle							
St. Mary Hospital○.....	Gen	Church	90	65	15	296	1,936
Libertyville, 3,930—Lake							
Candler Memorial Hospital. Gen		NPAssn	25	15	9	110	575
Linen, 12,752—Lagan							
Evaogelical Deaconess Hosp○ Gen		Church	55	39	13	238	1,622
St. Clara's Hospital.....	Gen	Church	60	40	7	125	1,276
Litchfield, 7,048—Montgomery							
St. Francis Hospital.....	Geo	Church	142	131	30	257	3,151
Mockinau, 545—Tazewell							
Oak Knoll Sanatorium.....	TB	County	45	36	..	...	50
Macomb, 8,764—McDonough							
Phelps Hospital	Gen	NPAssn	45	29	6	152	929
St. Francis Hospital○.....	Gen	Church	100	62	15	231	2,019
Manteno, 1,537—Kankakee							
Mantenn State Hospital+.....	Ment	State	6,092	5,577	..	...	2,136
Mattoon, 15,827—Coles							
Memorial Methodist Hosp..	Gen	Church	50	30	10	172	1,178
Melrose Park, 10,933—Cook							
Westlake Hospital▲	Gen	NPAssn	56	36	16	373	1,642
Mendota, 4,215—La Salle							
Harris Hospital	Gen	Part	18	14	5	07	514
Metropolis, 6,287—Massac							
Fisher Hospital	Gen	Indiv	15	4	4	72	448
Moline, 34,608—Rock Island							
Lutheran Hospital▲○.....	Gen	Church	125	67	21	691	2,260
Moline Public Hospital▲○.....	Gen	City	168	131	32	990	4,563
Munnouth, 9,696—Warren							
Monmouth Hospital	Gen	City	63	40	15	253	1,053
Morris, 6,145—Grundy							
Morris Hospital	Gen	NPAssn	35	24	14	249	1,061
Moweaqua, 1,366—Shelby							
Moweaqua Hospital	Gen	Indiv	26	20	8	80	199
Murphysboro, 8,976—Jackson							
St. Andrew's Hospital▲.....	Gen	Church	35	24	6	122	1,110
Naperville, 5,272—Du Page							
Edward Sanatorium▲	TB	NPAssn	99	88	..	...	191
Normal, 6,983—McLean							
Brnkaw Hospital▲○	Gen	Church	92	65	15	279	2,406
Fairview Sanatorium	TB	County	57	55	..	...	24

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admis- sions †
Syeamore, 4,702—De Kalb							
Syeamore Municipal Hosp.A. Gen	City	City	30	14	12	125	663
Taylorville, 8,313—Christian							
St. Vincent Hospital..... Gen	Church	Church	78	53	12	303	2,105
Tuscola, 2,538—Douglas							
Douglas County Jarman Hos- pital..... Gen	County	County	37	25	9	158	930
Urbana, 14,064—Champaign							
Carle Memorial HospitalA... Gen	Corp	Corp	55	37	10	156	1,773
Champaign County Hospital Gen	County	County	55	35	10	117	891
Mersey Hospitalo Gen	Church	Church	60	52	12	279	2,363
The Outlook..... TB	County	County	40	39	..	...	33
Vandalia, 5,285—Fayette							
Mark Greer Hospital..... Gen	Indiv	Indiv	29	25	8	143	946
Watseka, 3,744—Iroquois							
Iroquois Hospital..... Gen	NPAasn	NPAasn	41	30	6	259	1,314
Waukegan, 34,241—Lake							
Lake County General Hosp. Gen	County	County	75	52	6	51	1,019
Lake County Tuberculosis SanatoriumA TB	County	County	100	86	..	...	191
St. Therese's Hospitalo..... Gen	Church	Church	170	109	30	732	4,500
Victory Memorial Hospital.. Gen	NPAasn	NPAasn	76	61	14	466	3,213
White Hall, 3,025—Greene							
White Hall Hospital..... Gen	NPAasn	NPAasn	10	5	5	60	240
Winfield, 567—Du Page							
Winfield Sanatorium..... TB	NPAasn	NPAasn	78	63	..	...	89
Zane Sanatorium..... TB	NPAasn	NPAasn	60	38	..	...	70
Woodstock, 6,123—McHenry							
Woodstock Public Hospital, Gen	NPAasn	NPAasn	41	27	16	283	1,372
Zeigler, 3,606—Franklin							
Zeigler Hospital..... Indus	NPAasn	NPAasn	12	2	..	...	75
Related Institutions							
Arrowsmith, 294—McLean							
L. M. Jolinson Hospital..... Gen	Indiv	Indiv	10	1	2	14	45
Belleville, 28,405—St. Clair							
St. Clair County Hospital and Home..... InstGen	County	County	100	80	2	16	314
Chicago, 3,396,898—Cook							
Beverly Hills Rest Home.... Cony	Indiv	Indiv	12	8	..	...	22
Chicago Home for Convales- cent Women and Children..... Cony	NPAasn	NPAasn	47	35	..	...	229
Chicago Home for Incurables Incur	NPAasn	NPAasn	272	264	..	...	81
House of Correction Hosp.... Inst	City	City	75	22	..	...	1,161
Jones Nursing Home..... Cony	Indiv	Indiv	20	19	..	...	20
Long's Convalescent Home.. N&M	Indiv	Indiv	24	20	..	...	90
Parkway Lodge Convalescent Home for Men and Women Cony	City	City	180	139	..	...	607
Salvation Army Booth Mem- orial Hospital..... Mat	Church	Church	21	13	12	210	219
Southside Sanitarium..... Cony	Indiv	Indiv	50	35	..	...	20
Washington and Jane Smith Home..... InstGen	NPAasn	NPAasn	22	17	..	...	239
Danvers, 705—McLean							
Willow Bark Hospital..... Alcoh	Corp	Corp	12	5	..	...	43
Decatur, 59,305—Macon							
City Public Hospital..... Iso	City	City	40	5	..	...	100
Des Plaines, 3,518—Cook							
Forest Sanitarium..... N&M	Indiv	Indiv	24	12	..	...	47
Dixon, 10,671—Lee							
Dixon State Hospital..... McDe	State	State	4,570	4,303	10	8	696
Evanston, 65,359—Cook							
Broadhurst Nursing Home.. Cony	Part	Part	24	18	..	...	65
Grove House for Convales- cents Cony	NPAasn	NPAasn	25	13	..	...	224
The Cradle..... Chll	NPAasn	NPAasn	36	30	..	...	169
Virginia Hall Nurslog Home Cony	Part	Part	30	24	..	...	53
Geneva, 4,101—Kane							
State Training School for Girls..... Inst	State	State	22	17	..	...	212
Godfrey, 300—Madison							
Beverly Farm..... McDe	Corp	Corp	85	75	..	...	14
Henry, 1,877—Marshall							
Drs. Coggeshall and Dysart Hospital..... Gen	Part	Part	6	3	3	23	129
Lincoln, 12,752—Logan							
Lincoln State School and Colony..... McDe	State	State	4,673	4,313	..	...	512
Mattoon, 15,827—Coles							
Independent Order Odd Fel- lows Old Folks Home Hos- pital..... Inst	NPAasn	NPAasn	55	40	..	...	187
..... tal.... Ment	State	State	473	460	..	...	47
..... ibereu-							
..... losis Sanatorium..... TB	County	County	12	8	..	...	5
Mooseheart, 995—Kane							
Philadelphia Memorial Hos- pital..... InstChll	NPAasn	NPAasn	65	43	..	...	1,242
Normal, 6,383—McLean							
Soldiers' and Sailors' Chll- dren's School Hospital... Inst	State	State	120	64	..	...	1,575
Peoria, 105,037—Peoria							
Florence Crittenton Home.. Mat	NPAasn	NPAasn	70	43	4	75	83
P.....							
..... Inst	State	State	120	84	..	...	1,169
Quincy, 40,400—Quincy	Cony	NPAasn	20	6	..	...	119
.....							
..... Orth	NPAasn	NPAasn	30	20	..	...	27

Key to symbols and abbreviations is on page 1071

ILLINOIS—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
St Charles, 5,670—Kane							
Illinois State Training School for Boys	Inst	State	27	15		1,163	
Urbana, 14,064—Champaign							
McKinley Memorial Hospital	Inst	State	153	42		3,072	
Wedron, 202—La Salle							
St Joseph's Health Resort	Conv	Church	71	53		1,142	
West Chicago, 3,335—Du Page							
Country Home for Convalescent Crippled Children	Orth	NP Assn	120	67		122	
Wheaton, 7,389—Du Page							
Mary E Pogue School	McDe	Indiv	55	50		13	
Winnetka, 12,430—Cook							
North Shore Health Resort	Conv	Corp	75	39		280	

INDIANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Anderson, 41,572—Madison							
Hoppes Lying In Hospital	Mat	Corp	13	4	10	176	233
St John's Heikey Memorial Hospital	Gen	Church	135	126	17	692	3,586
Angola, 3,141—Steuben							
Cameron Hospitals	Gen	NP Assn	20	11	5	72	623
Argos, 1,190—Marshall							
Kelly Hospital	Gen	NP Assn	10	5	4	27	207
Auburn, 5,413—De Kalb							
Dr Bonnell M Souder Hospital	Gen	Indiv	20	5	7	92	363
Sanders General Hospital	Gen	Indiv	11	7	4	24	
Batesville, 3,063—Ripley							
Margaret Mary Hospital	Gen	Church	40	32	10	212	1,169
Bedford, 12,314—Lawrence							
Dunn Memorial Hospital	Gen	NP Assn	23	25	6	223	1,526
Beech Grove, 3,907—Marion							
St Francis Hospital	Gen	Church	140	77	40	1,091	3,233
Bloomington, 20,870—Monroe							
Bloomington Hospital	Gen	NP Assn	35	23	15	120	795
Bluffton, 5,417—Wells							
Clinic Hospital	Gen	Corp	38	25	8	77	1,338
Wells County Hospital	Gen	County	24	12	6	160	486
Clinton, 7,092—Vermillion							
Vermillion County Hospital	Gen	County	37	26	6	176	1,048
Columbus, 11,738—Bartholomew							
Bartholomew County Hosp	Gen	County	35	27	10	247	1,610
Connersville, 12,695—Fayette							
Fayette Memorial Hospital	Gen	NP Assn	40	27	15	280	960
Crawfordsville, 11,039—Montgomery							
Culver Hospital	Gen	County	57	42	12	301	1,638
Crown Point, 4,043—Lake							
James O Parramore Hosp	TB	County	280	278			215
Deatur, 5,861—Adams							
Adams County Memorial Hospital	Gen	County	40	28	12	232	1,281
East Chicago, 54,637—Lake							
St Catherine's Hospital	Gen	Church	280	193	60	1,214	8,293
Elkhart, 33,434—Elkhart							
Elkhart General Hospital	Gen	NP Assn	73	60	10	601	2,562
Elwood, 10,913—Madison							
Mercy Hospital	Gen	Church	43	21	15	338	1,070
Evansville 9,062—Vanderburgh							
Boehne Tuberculosis Hosp	TB	County	150	196			283
Evansville State Hospital	Ment	State	1,200	1,185			393
Protestant Deaconess Hospital	Gen	Church	163	135	23	750	5,981
St Mary's Hospital	Gen	Church	150	100	20	546	4,827
U S Marine Hospital	Gen	USPHS	100	31			741
Welborn Walker Hospital	Gen	Corp	111	86	15	211	3,269
Fort Benjamin Harrison, —Marion							
Station Hospital	Gen	Army	134	78	4	27	2,178
Fort Wayne, 118,410—Allen							
Irene Byron Sanatorium	TB	Counties	250	215			468
Lutheran Hospital	Gen	Church	170	124	34	850	4,161
Methodist Hospital	Gen	Church	87	58	22	295	2,061
St Joseph Hospital	Gen	Church	248	166	52	1,024	5,800
Frankfort, 13,706—Clinton							
Clinton County Hospital	Gen	County	43	24	10	250	990
Garrett, 4,233—De Kalb							
Sacred Heart Hospital	Gen	Church	42	30	8	90	705
Gary, 111,719—Lake							
Lincoln Hospital	Gen	NP Assn	40	15	6	38	338
Methodist Hospital	Gen	Church	116	122	24	1,012	4,580
St John Hospital	Gen	Indiv	17	4	6	37	330
St Mary's Mercy Hosp	Gen	Church	215	163	50	1,741	6,933
Greensburg, 4,872—Putnam							
Putnam County Hospital	Gen	County	46	23	8	135	1,274
Greensburg, 6,063—Deatur							
Deatur County Memorial Hospital	Gen	County	23	20	10	126	733
Hammond, 70,154—Lake							
Mount Verey Sanatorium	N&M	Church	22	24			190
St Margaret Hospital	Gen	Church	215	163	50	1,723	7,133
Hartford City, 6,946—Blackford							
Blackford County Hospital	Gen	County	30	12	5	190	527
Huntington, 13,903—Huntington							
Huntington County Hospital	Gen	County	22	21	12	204	772

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Indianapolis, 386,972—Marion							
Central State Hospital	Ment	State	2,244	2,084			499
Emhardt Memorial Hospital	Gen	Indiv	30	10	8	3	333
Dr W B Fletcher's Sanatorium (Neuronhurst)	N&M	Corp	50	23			174
Flower Mission Memorial Hospital	Unit of Indianapolis City Hospital						
Indianapolis City Hosp	Gen	City	533	489	41	837	10,892
Indianapolis City Hosp TB	Gen	City	100	76			143
Indiana University Medical Center	Gen	State	566	500	38	1,071	10,036
James Whitecomb Riley Hospital for Children	Unit of Indiana University Medical Center						
Kiwanis Home	Unit of Indiana University Medical Center						
Methodist Hospital	Gen	Church	600	439	60	2,374	15,835
"Nurways" Sterne Memorial Hospital	N&M	Corp	30	16			236
Robert W Long Hospital	Unit of Indiana University Medical Center						
Rotary Convalescent Home	Unit of Indiana University Medical Center						
St Vincent's Hospital	Gen	Church	270	272	55	1,495	7,802
Sunnyside Sanatorium	Gen	County	267	259			179
Veterans Admin Facility	Gen	Vet	346	280			2,939
William H Coleman Hospital for Women	Unit of Indiana University Medical Center						
Jeffersonville, 11,493—Clark							
Clark County Memorial Hospital	Gen	County	40	23	7	193	904
Kendallville, 5,431—Noble							
Lakeside Hospital	Gen	City	28	19	12	150	736
Kokomo, 33,793—Howard							
St Joseph Memorial Hospital	Gen	Church	100	39	25	480	2,835
La Fayette, 28,798—Tippecanoe							
La Fayette Home Hosp	Gen	NP Assn	123	86	23	520	3,392
St Elizabeth Hospital	Gen	Church	230	161	30	679	6,100
William Ross Sanatorium	Gen	County	40	24			55
La Porte, 16,189—La Porte							
Fairview Hospital	Gen	NP Assn	33	18	8	137	649
Lebanon, 6,599—Boone							
Witham Memorial Hospital	Gen	County	54	34	12	273	1,202
Linton, 6,263—Greene							
Freeman Greene County Hospital	Gen	County	40	17	8	278	833
Logansport, 20,177—Cass							
Cass County Hospital	Gen	County	60	52	10	244	1,665
Logansport State Hospital	Ment	State	2,395	2,126			390
St Joseph Hospital	Gen	Church	50	36	10	184	1,140
Madison 6,923—Jefferson							
Kings Daughters Hospital	Gen	NP Assn	50	27	10	133	662
Marion, 26,767—Grant							
Marion General Hospital	Gen	NP Assn	55	39	10	360	1,931
Veterans Admin Facility	See Veterans Admin Hospital, Ind						
Martinsville, 5,009—Vorgan							
Morgan County Memorial Hospital	Gen	County	18	9	5	78	609
Michigan City, 26,476—La Porte							
Clinic Hospital	Gen	Corp	50	29	12	93	1,594
Indiana Hospital for Insane Criminals	Ment	State	297	296			29
Indiana State Prison Hospital	Inst	State	125	95			790
Michigan City Sanatorium	Conv	Corp	31	10			329
St Anthony's Hospital	Gen	Church	105	41	21	423	1,769
Wishawaka, 28,298—St Joseph							
St Joseph Hospital	Gen	Church	100	66	20	690	3,449
Mooresville, 1,979—Morgan							
Comer's Sanatorium	Proet	Indiv	15	8			300
Muncie, 49,720—Delaware							
Ball Memorial Hospital	Gen	NP Assn	217	181	23	1,032	3,633
New Albany, 23,414—Floyd							
St Edward Hospital	Gen	Church	100	47	14	300	1,696
"Silvercrest" Southern Indiana Tuberculosis Hospital	TB	State	152	129			293
New Castle, 16,670—Henry							
Clinic Hospital	Gen	Part	18	No data supplied			
Henry County Hospital	Gen	County	60	31	14	361	2,255
North Madison, 316—Jefferson							
Madison State Hospital	Ment	State	1,530	1,503			316
Peru, 12,432—Miami							
Dukes Miami County Memorial Hospital	Gen	County	48	41	12	256	1,760
Wahash Railroad Employees Hospital	Indus	NP Assn	50	25			519
Plymouth, 5,713—Marshall							
Parkview Hospital	Gen	County	30	21	7	258	1,026
Portland, 6,362—Jay							
Jay County Hospital	Gen	County	35	28	10	279	1,215
Princeton, 7,736—Gibson							
Gibson General Hospital	Gen	NP Assn	30	21	6	179	770
Rensselaer 3,214—Jasper							
Jasper County Hospital	Gen	County	38	23	10	284	1,202
Richmond, 33,147—Wayne							
Red Memorial Hospital	Gen	NP Assn	128	99	30	720	5,062
Richmond State Hospital	Ment	State	1,690	1,630			358
Smith-Ester Memorial Hospital	TB	County	50	41			39
Rochester, 3,835—Fulton							
Woodsboro Hospital	Gen	Indiv	31	13	5	97	601
Rockville, 2,908—Parke							
Indiana State Sanatorium	TB	State	230	202			276
Rushville, 5,960—Rush							
City Hospital	Gen	City	11	6	6	115	375
Seymour, 8,700—Jackson							
Schneck Memorial Hospital	Gen	County	25	15	8	178	609
Shelbyville, 10,791—Shelby							
W S Major Hospital	Gen	City	43	20	6	156	1,793

Key to symbols and abbreviations is on page 1071

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
South Bend, 101,268—St. Joseph Epworth Hospital*+Ao	Gen	NPAasn	155	135	37	1,108	6,031
Healthwin Hospital*+Ao	TB	County	205	167	...	...	273
St. Joseph Hospital*+Ao	Gen	Church	150	99	42	926	4,164
Sullivan, 5,077—Sullivan Mary Sherman Memorial Hospital	Gen	County	50	31	7	132	1,013
Tell City, 5,395—Perry Parkview Hospital	Gen	Indiv	14	4	2	12	211
Terre Haute, 62,693—Vigo Hoover's Sanatorium	Gen	Indiv	14	4	5	25	401
St. Anthony's Hospital*+Ao	Gen	Church	176	103	26	458	3,219
Union Hospital*+Ao	Gen	NPAasn	180	121	25	609	4,779
Tipton, 5,101—Tipton Emergency Hospital	Gen	Part	10	4	2	87	284
Union City, 3,535—Randolph Union City Hospital	Gen	Indiv	13	7	3	86	422
Valparaiso, 5,736—Porter Porter Memorial Hospital	Gen	County	52	33	17	332	1,064
Veterans Administration Hospital, 507—Grant Veterans Admin Facility*+Ment	Gen	Vet	1,509	1,501	...	...	308
Vincennes, 18,228—Knox Good Samaritan Hospital	Gen	County	92	66	8	272	2,022
Hillcrest Tuberculosis Hosp.. TB	TB	County	63	30	...	...	41
Wabash, 9,653—Wabash Wabash County Hospital	Gen	County	55	32	14	278	1,207
Warsaw, 6,378—Kosciusko McDonald Hospital	Gen	Indiv	31	25	0	191	875
Murphy Hospital	Gen	Indiv	25	13	10	97	692
Washington, 9,312—Davies Davies County Hospital	Gen	County	96	65	12	290	2,139
Williamsport, 1,222—Warren Maris Hospital	Gen	Part	19	12	5	53	607
Winchester, 5,303—Randolph Randolph County Hospital	Gen	County	35	30	8	227	1,509
Wolf Lake, 250—Noble Luckey Hospital	Gen	Part	17	9	4	30	185

Related Institutions

Anderson, 41,572—Madison Ella B. Kehrer Hospital	TB	County	50	35	...	...	64
Butler, 266—Jennings Muscatatuck State School	McDe	State	1,250	1,116	...	...	955
Evansville, 97,062—Vanderburgh French Hospital	Proet	NPAasn	6	4	...	...	280
Fort Wayne, 118,410—Allen Fort Wayne State School	McDe	State	1,903	1,930	...	...	313
Grace Convalescent Hosp...	Conv	Indiv	20	12	...	...	30
Medical Center Hospital	Gen	Indiv	16	8	7	179	620
Greensville, 4,572—Putnam Indiana State Farm Hosp.	Inst	State	47	25	...	...	700
Greensburg, 9,065—Deatur Odd Fellows Home Hosp.	Inst	NPAasn	75	55	...	...	73
Indianapolis, 386,972—Marion Suemma Coleman Home	Mat	NPAasn	20	14	20	40	54
Knightstown, 2,223—Henry Indiana Sailors' and Soldiers' Children's Home	Inst	State	45	4	...	...	1,186
Kramer, 500—Warren Mudiavia Springs Hotel and Sanatorium	Conv	Corp	65	No data supplied	...	...	...
La Fayette, 23,788—Tippecanoe Indiana State Soldiers' Home Hospital	Inst	State	129	57	...	...	414
Lagrange, 1,814—Lagrange Lagrange County Hospital	Inst	County	14	7	...	...	181
Martinsville, 5,009—Morgan Home Lawn Mineral Springs Conv	Corp	Corp	164	82	...	...	1,920
Martinsville Sanatorium	Conv	Corp	114	42	...	...	1,110
New Castle, 16,620—Henry Indiana Village for Epileptics	Epil	State	1,035	981	...	...	159
Pendleton, 1,681—Madison Indiana State Reformatory Hospital	Inst	State	106	28	...	...	1,674
Plainfield, 1,811—Hendricks Indiana Boys School Hosp.	Inst	State	17	4	...	...	496
Rome City, 504—Noble Kneip Springs Sanatorium	Conv	Church	200	...	...	...	1,694
Wilkinson, 336—Hancock Dr. Charles Titus Hospital	ENT	Indiv	7	1	...	...	375

IOWA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Akron, 1,314—Plymouth Akron Hospital	Gen	Indiv	14	5	3	45	245
Albia, 5,157—Monroe Miner's Hospital	Gen	Indiv	25	7	4	2	415
Algona, 4,954—Kossuth Kossuth Hospital	Gen	Indiv	28	18	8	142	537
Alta, 1,269—Buena Vista Alta Community Hospital	Gen	NPAasn	13	3	5	25	151
Ames, 12,555—Story Iowa State College Hosp.	Gen	State	75	11	...	...	1,217
Anamosa, 4,069—Jones Mercy Hospital	Gen	Church	30	15	9	156	640

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Atlantic, 5,802—Cass Atlantic Hospital	Gen	Corp	44	23	6	192	821
Battle Creek, 827—Ida Battle Creek Hospital	Gen	Part	17	6	4	33	200
Belmond, 2,109—Wright Belmond Hospital	Gen	Part	11	5	4	73	297
Boone, 12,373—Boone Boone County Hospital	Gen	County	75	20	10	298	991
Buffalo Center, 911—Winnebago Dolmage Hospital	Gen	Part	13	8	7	87	232
Burlington, 25,832—Des Moines Burlington Protestant Hospital	Gen	NPAasn	106	96	20	301	2,706
Mersey Hospital	Gen	Church	125	50	20	250	1,518
St. Francis Hospital	Gen	Church	60	38	14	180	1,353
Carroll, 5,389—Carroll St. Anthony Hospital	Gen	Church	108	90	22	516	3,191
Cedar Falls, 9,349—Black Hawk Sartori Memorial Hospital	Gen	City	35	20	8	200	920
Cedar Rapids, 62,120—Linn Mersey Hospital	Gen	Church	127	90	25	712	3,405
St. Luke's Methodist Hospital	Gen	Church	130	99	20	697	4,671
Centerville, 8,412—Appanoose St. Joseph's Mercy Hospital	Gen	Church	44	32	6	212	1,766
Chariton, 5,754—Lucas Yocom Hospital	Gen	Indiv	20	10	5	59	553
Charles City, 8,631—Floyd Cedar Valley Hospital	Gen	City	45	31	12	213	1,257
Cherokee, 7,469—Cherokee Cherokee State Hospital	Ment	State	1,600	1,612	...	...	533
Sioux Valley Hospital	Gen	NPAasn	35	22	12	212	1,170
Clarinda, 4,905—Page Clarinda Municipal Hospital	Gen	City	40	15	10	142	1,901
Clarinda State Hospital	Ment	State	1,793	1,635	...	...	437
Clarion, 2,971—Wright Clarion General Hospital and Clinic	Gen	Part	14	...	6	Estab. 1941	...
Clinton, 26,270—Clinton Jane Lamb Memorial Hosp.	Gen	NPAasn	95	69	15	324	2,473
St. Joseph Mercy Hospital	Gen	Church	73	58	12	289	1,545
Colfax, 2,262—Jasper Colfax Sanatorium	Gen	Corp	18	6	1	16	215
Council Bluffs, 41,439—Pottawattamie Jennie Edmundson Memorial Hospital	Gen	NPAasn	122	79	16	405	2,756
Mersey Hospital	Gen	Church	138	85	12	345	3,115
St. Bernard's Hospital	N&M	Church	180	145	...	...	253
Creese, 3,530—Howard St. Joseph Mercy Hospital	Gen	Church	25	11	7	77	425
Creston, 8,633—Union Greater Community Hosp.	Gen	County	50	No data supplied	...	...	...
Davenport, 60,039—Scott Mercy Hospital	Gen	Church	157	108	30	873	4,522
Pine Knoll Sanatorium	TB	County	100	70	...	...	90
St. Elizabeth's and St. John's Hospitals	Unit of Mercy Hospital	Church	60	62	20	691	2,504
St. Luke's Hospital	Gen	Church	60	62	20	691	2,504
Decorah, 5,303—Winneshek Decorah Hospital	Gen	NPAasn	29	21	8	246	894
Denison, 4,361—Crawford Denison Hospital	Gen	Indiv	15	7	4	44	413
Des Moines, 159,819—Polk Broadlawn Polk County Public Hospital	Gen	County	132	108	16	355	4,495
Broadlawn Polk County Public Hospital	Gen	County	49	12	...	...	271
Broadlawn Polk County Public Hospital	TB	County	100	62	...	...	83
Iowa Lutheran Hospital	Gen	Church	125	86	20	599	3,710
Iowa Methodist Hospital	Gen	Church	239	162	40	1,034	1,756
Mersey Hospital	Gen	Church	103	112	24	612	4,427
The Retreat	N&M	Corp	50	35	...	...	109
Veterans Admin. Facility	Gen	Vet	389	307	...	...	2,975
Dubuque, 43,692—Dubuque Finley Hospital	Gen	NPAasn	100	75	16	341	2,915
St. Joseph Mercy Hospital	Gen	Church	130	83	22	449	2,499
St. Joseph Sanatorium	N&M	Church	200	201	...	...	491
Sunny Crest Sanatorium	TB	County	70	62	...	...	57
Eldora, 3,553—Hardin Eldora Memorial Hospital	Gen	City	26	10	6	78	765
Alto Gen	NPAasn	22	12	8	111	309	...
Gen	NPAasn	35	17	6	169	551	...
Fairfield, 6,773—Jefferson Jefferson County Hospital	Gen	County	26	20	6	169	1,000
Forest City, 2,545—Winnebago Irish Hospital	Gen	Indiv	14	9	5	132	310
Fort Des Moines, 1,500—Polk Station Hospital	Gen	Army	73	39	4	55	1,161
Fort Dodge, 22,964—Webster Lutheran Hospital	Gen	Church	100	66	20	473	2,465
St. Joseph Mercy Hospital	Gen	Church	125	70	13	319	2,295
Fort Madison, 14,063—Lee Atchison, Topeka and Santa Fe Railway Employees' Hospital	Indus	NPAasn	40	16	...	...	479
Sacred Heart Hospital	Gen	Church	60	25	10	217	2,007
Gen	NPAasn	54	22	6	119	1,671	...
Gen	Church	29	13	10	72	479	...

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
Hamburg, 2,187—Fremont	Gen	Indiv	16	12	4	71	651
Hamburg Hospital	Gen	Chureh	46	25	8	149	1,026
Hampton, 4,006—Franklin	Gen	Chureh	46	25	8	149	1,026
Lutheran Hospital	Gen	Indiv	12	5	4	67	367
Hartley, 1,503—O'Brien	Gen	Indiv	12	5	4	67	367
Hand Hospital	Gen	Corp	15	10	3	23	462
Hull, 1,072—Sioux	Gen	Corp	15	10	3	23	462
Hull Hospital	Gen	Corp	15	10	3	23	462
Ida Grove, 2,238—Ida	Gen	Part	12	4	4	39	225
Ida Grove General Hospital	Gen	Part	12	4	4	39	225
Independence, 4,342—Buchanan	Gen	State	1,735	1,664			404
Independence State Hospital	Gen	NPAasn	32	18	8	155	632
Peoples Hospital	Gen	NPAasn	32	18	8	155	632
Iowa City, 17,182—Johnson	Gen	Unit of University Hospitals					
Children's Hospital	Gen	Unit of University Hospitals					
Iowa State Psychopathic Hospital	Gen	State	60	41			376
Mercy Hospital	Gen	Chureh	100	77	20	478	2,241
University Hospitals	Gen	State	900	750	54	1,946	21,564
Iowa Falls, 4,425—Hardin	Gen	City	35	20	10	200	1,600
Ellsworth Municipal Hosp	Gen	City	35	20	10	200	1,600
Keokuk, 35,076—Lee	Gen	NPAasn	75	50	12	230	2,447
Graham Protestant Hosp	Gen	Chureh	110	60	15	283	2,130
St Joseph's Hospital	Gen	Chureh	110	60	15	283	2,130
Knoxville, 6,936—Marion	Gen	Vet	1,263	1,263			415
Veterans Admin Facility	Gen	Vet	1,263	1,263			415
Lake City, 2,216—Calhoun	Gen	Indiv	10	7	6	21	349
Davidson Hospital	Gen	Indiv	28	8	6	72	460
McCrory Hospital	Gen	Part	15	11	5	80	450
McVay Memorial Hospital	Gen	Chureh	40	25	10	225	1,006
Le Mars, 5,353—Plymouth	Gen	Chureh	40	25	10	225	1,006
Sacred Heart Hospital	Gen	Chureh	40	25	10	225	1,006
Leon, 2,307—Decatur	Gen	County	30	12	5	97	606
Decatur County Hospital	Gen	County	30	12	5	97	606
Manchester, 3,762—Delaware	Gen	Part	10	7	3	45	272
Drs Jones and Clark Hosp	Gen	Part	10	7	3	45	272
Manning, 1,748—Carroll	Gen	NPAasn	20				No data supplied
Wyatt Memorial Hospital	Gen	NPAasn	20				No data supplied
Maquoketa, 4,076—Jackson	Gen	Indiv	20	12	6	52	299
City Memorial Hospital	Gen	Indiv	20	12	6	52	299
Marshalltown, 19,240—Marshall	Gen	Church	150	104	20	407	3,034
Evangelical Deaconess Home and Hospital	Gen	Church	68	50	15	302	1,152
St Thomas Mercy Hosp	Gen	Church	68	50	15	302	1,152
Mason City, 27,080—Cerro Gordo	Gen	Corp	50	37	12	211	1,495
Park Hospital	Gen	Corp	50	37	12	211	1,495
St Joseph's Mercy Hosp	Gen	Chureh	175	72	25	466	2,604
McGregor, 1,309—Clayton	Gen	Indiv	10	5	3	23	155
McGregor Hospital	Gen	Indiv	10	5	3	23	155
Monticello, 2,546—Jones	Gen	NPAasn	30	23	10	184	620
John McDonald Hospital	Gen	NPAasn	30	23	10	184	620
Mt Pleasant, 4,610—Henry	Gen	State	1,622	1,304			451
Mt Pleasant State Hospital	Gen	State	1,622	1,304			451
Museatine, 18,226—Museatine	Gen	NPAasn	42	23	12	156	1,170
Bellevue Hospital	Gen	NPAasn	42	23	12	156	1,170
Benjamin Hershey Memorial Hospital	Gen	NPAasn	50	26	10	201	1,360
Nevada, 3,333—Story	Gen	Church	40	14	5	105	429
Iowa Sanitarium and Hosp	Gen	Church	40	14	5	105	429
New Hampton, 2,933—Chickasaw	Gen	Church	51	27	9	156	1,163
St Joseph's Hospital	Gen	Church	51	27	9	156	1,163
Newton, 10,462—Jasper	Gen	City	43	36	7	189	998
Mary Frances Skiff Memorial Hospital	Gen	City	43	36	7	189	998
Oakdale—Johnson	Gen	State	424	402			301
State Sanatorium	Gen	State	424	402			301
Oelwein, 7,801—Payette	Gen	Chureh	30	21	11	194	933
Mercy Hospital	Gen	Chureh	30	21	11	194	933
Onawa, 3,438—Monona	Gen	Indiv	21	8	6	51	419
Onawa Hospital	Gen	Indiv	21	8	6	51	419
Oscola, 3,281—Clarke	Gen	Indiv	17	9	4	24	234
Bates Hospital	Gen	Indiv	20	13	6	34	498
Harken Hospital	Gen	Indiv	20	8	4	90	461
Oscola Hospital	Gen	Indiv	20	8	4	90	461
Oskaloosa, 11,094—Mahaska	Gen	Part	30	18	5	93	644
Mercy Hospital	Gen	Part	30	18	5	93	644
Ottumwa, 31,576—Wapello	Gen	NPAasn	62	40	16	251	1,720
Ottumwa Hospital	Gen	NPAasn	62	40	16	251	1,720
St Joseph Hospital	Gen	Chureh	86	50	14	315	1,404
Sunnyslope Sanatorium	Gen	County	106	76			72
Perry, 5,977—Dallas	Gen	NPAasn	21	10	5	101	582
Kings Daughters Hospital	Gen	NPAasn	21	10	5	101	582
Pleasantville, 895—Marion	Gen	Indiv	10	4	2	8	161
Community Hospital	Gen	Indiv	10	4	2	8	161
Rock Rapids, 2,556—Johnson	Gen	Indiv	10	6	5	42	307
W Vander Wilt Hospital	Gen	Indiv	10	6	5	42	307
Rockwell City, 2,361—Calhoun	Gen	Part	11	7	5	70	285
Rockwell City Hospital	Gen	Part	11	7	5	70	285
Sheldon, 3,768—O'Brien	Gen	Church	16	11	5	55	333
Sheldon Good Samaritan Hospital	Gen	Church	16	11	5	55	333
Shenandoah, 6,816—Page	Gen	NPAasn	33	23	7	200	1,293
Hand Memorial Hospital	Gen	NPAasn	33	23	7	200	1,293
Sibley, 2,556—Oscola	Gen	Part	16	7	6	42	325
Oscola Hospital	Gen	Part	16	7	6	42	325
Siourney, 2,333—Keokuk	Gen	Indiv	11	2	2	11	782
Siourney Hospital	Gen	Indiv	11	2	2	11	782
Sioux City, 82,364—Woodbury	Gen	Church	95	63	10	306	2,292
Lutheran Hospital	Gen	Church	109	87	16	355	3,450
Methodist Hospital	Gen	Chureh	200	125	20	711	5,531
St Joseph Mercy Hosp	Gen	Chureh	200	125	20	711	5,531
St Vincent's Hospital	Gen	Chureh	116	100	14	322	4,547

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
Spencer, 6,599—Clay	Gen	City	26	20	9	125	1,050
Spencer Municipal Hospital	Gen	City	26	20	9	125	1,050
Spirit Lake, 2,161—Dickinson	Gen	Part	13	8	4	72	448
Spirit Lake Hospital	Gen	Part	13	8	4	72	448
Storm Lake, 5,274—Buena Vista	Gen	Indiv	9	9	6	135	341
Pornth Hospital	Gen	Indiv	9	9	6	135	341
Toledo, 2,073—Tama	Gen	Indiv	9	9	6	135	341
Sne and Fox Sanatorium	Gen	Indiv	9	9	6	135	341
Vinton, 4,163—Benton	Gen	City	26	14	6	94	463
Virginia Gay Hospital	Gen	City	26	14	6	94	463
Washington, 5,227—Washington	Gen	County	35	25	10	214	988
Washington County Hosp	Gen	County	35	25	10	214	988
Waterloo, 51,743—Black Hawk	Gen	NPAasn	75	67	15	673	3,276
Allen Memorial Hospital	Gen	NPAasn	34	29	10	161	1,736
Presbyterian Hospital	Gen	NPAasn	34	29	10	161	1,736
St Francis Hospital	Gen	Chureh	90	69	24	550	2,276
Waverly, 4,156—Bremer	Gen	Chureh	50	26	10	196	1,051
St Joseph Mercy Hospital	Gen	Chureh	50	26	10	196	1,051
West Union, 2,050—Fayette	Gen	City	12	6	4	57	288
West Union Community Hospital	Gen	City	12	6	4	57	288
Williamsburg, 1,308—Iowa	Gen	Indiv	8	4	2	22	157
Miller Hospital	Gen	Indiv	8	4	2	22	157

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †
Anamosa, 4,069—Jones	Inst	State	25	6			521
Men's Reformatory Hospital	Inst	State	25	6			521
Des Moines, 159,819—Polk	Mat	NPAasn	25	14	5	13	15
Benedict Home	Mat	NPAasn	25	14	5	13	15
Junior League Convalescent Home for Children	Conv	NPAasn	20	16			80
Salvation Army Booth Memorial Hospital	Mat	Chureh	50	31	30	78	93
Eldora, 3,563—Hardin	Inst	State	20	10			483
Iowa Training School for Boys Hospital	Inst	State	20	10			483
Fort Madison, 14,063—Lee	Inst	State	30	21			510
Iowa State Penitentiary Hospital	Inst	State	30	21			510
Glenwood, 4,501—Mills	MeDe	State	1,550	1,058			109
Glenwood State School	MeDe	State	1,550	1,058			109
Harlan, 3,727—Shelby	Gen	Indiv	14	7	5	88	389
Harlan Hospital	Gen	Indiv	14	7	5	88	389
Marshalltown, 19,240—Marshall	Inst	State	170	103			470
Iowa Soldiers' Home Hosp	Inst	State	170	103			470
Odebolt, 1,850—Sae	Gen	Indiv	8	3	3	26	100
Odebolt Hospital	Gen	Indiv	8	3	3	26	100
Orange City, 1,920—Sioux	Gen	Indiv	6	2	1	17	133
Doornink Hospital	Gen	Indiv	6	2	1	17	133
Postville, 1,194—Allamakee	Gen	City	15	4	3	34	194
Postville Community Hosp	Gen	City	15	4	3	34	194
Red Oak, 5,763—Montgomery	Gen	Part	8	2			90
Powell School for Backward and Nervous Children	MeDe	Indiv	50	45			11
Sae City, 3,165—Sae	Gen	Indiv	10	3	3	14	96
Sae City Hospital	Gen	Indiv	10	3	3	14	96
Sioux City, 82,364—Woodbury	Mat	NPAasn	30	26	35	78	68
Florence Crittenton Home	Mat	NPAasn	30	26	35	78	68
Toledo, 2,073—Tama	Inst	State	32	15			297
State Juvenile Home Hosp	Inst	State	32	15			297
Waukon, 2,972—Allamakee	Gen	Part	8	2			90
Rominger and Jeffries Emergency Hospital	Gen	Part	8	2			90
Woodward, 695—Dallas	MeDe	State	1,550	1,552			150
Hospital for Epileptics and School for Feeble-minded	MeDe	State	1,550	1,552			150

KANSAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins†	Number of Births	Admissions †
Abilene, 5 671—Dickinson Dickinson County Memorial Hospital	Gen	NPAasn	30	14	6	160	745
Anthony, 2,873—Harper Galloway Hospital	Gen	Indiv	32			No data supplied	
Arkansas City, 12 752—Cowley Mercy Hospital	Gen	NPAasn	40	13	8	156	765
Stricklen Hospital	Gen	NPAasn	28	4	5	5	133
Atchison, 12 645—Atchison Atchison Hospital	Gen	NPAasn	45	18	9	313	849
Atwell, 545—Marshall Axtell Hospital	Gen	Indiv	12	6	5	54	374
Belleville, 2 550—Republle Pnterson Memorial Hosp	Gen	Indiv	20	8	4	22	340
Beloit, 3,768—Mitchell Community Hospital	Gen	NPAasn	49	17	0	155	849
Childwell, 1,962—Sumner Caldwell General Hospital	Gen	NPAasn	20	6	5	67	352
Chanute, 10 142—Neosho Johnson Hospital	Gen	Corp	50	15	6	103	954
Coffeyville, 17,355—Montgomery Coffeyville General Hospital	Gen	Indiv	10	4	2	6	148
Mediclin Center Hospital	Gen	NPAasn	14	10	6	105	1,724
Southeast Kansas Hospital	Gen	NPAasn	23	9	5	112	801
Columbus 3 402—Cherokee Maude Norton Memorial City Hospital	Gen	City	19	12	2	2	479

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Norton, 2,762—Norton							
Kennedy Memorial Hospital.....	Unit	of State	Sanatorium	for Tuberculosis			
Norton Hospital	City		25	13	6	65	394
State Sanatorium for TuberculosisA	TB	State	486	405	..	...	329
Norwich, 411—Klingman							
Willaeg Hospital	Gen	Indiv	0	4	..	18	106
Oberlin, 1,878—Decatur							
Benton Memorial Hospital..	Gen	Part	14	4	4	50	219
Osawatimie, 4,145—Miami							
	Ment	State	1,715	1,650	..	...	307
	Gen	County	35	12	12	123	715
Mercy HospitalA	Gen	Church	28	21	10	142	733
		NPAasn	50	28	..	...	510
		State	920	850	..	...	99
Pittsburg, 1,548—Scott							
Mt. Carmel HospitalAO	Gen	Church	75	52	12	180	2,035
Pratt, 6,591—Pratt							
Ninnesah HospitalAO	Gen	Corp	27	14	5	67	614
Sabetha, 2,241—Nemaha							
St. Anthony Murdock Memorial HospitalAO	Gen	Church	100	65	12	97	1,827
Salina, 21,073—Saline							
Asbury Protestant HospitalAO	Gen	Church	50	45	15	234	1,444
St. John's HospitalAO	Gen	Church	70	48	15	208	1,335
Scott City, 1,548—Scott							
Scott City Hospital	Gen	NPAasn	11	5	4	76	823
Spearville, 603—Ford							
Perkins Hospital	Gen	NPAasn	10	7	3	33	325
Stafford, 2,011—Stafford							
Feldhut Memorial Hospital..	Gen	Part	25	11	5	97	582
Sterling, 2,215—Rice							
Sterling Hospital	Gen	NPAasn	20	12	4	41	640
Syracuse, 1,226—Hamilton							
Donohue Memorial Hospital	Gen	County	21	6	4	50	207
Topeka, 67,833—Shawnee							
Atchison, Topeka and Santa Fe Railway HospitalA.....	Indus	NPAasn	140	00	..	...	2,218
Christ's HospitalAO	Gen	Church	95	50	20	220	1,540
Hillcrest Sanatorium	TB	CyCo	70	44	..	...	170
Jane C. Stormont Hosp.AO	Gen	NPAasn	80	69	20	410	1,829
Menninger Sanitarium+A	N&M	Corp	60	42	..	...	107
St. Francis Hospital+A	Gen	Church	85	77	15	403	2,535
Topeka State Hospital	Ment	State	1,588	1,900	..	...	333
Wadsworth, 2,300—Leavenworth							
Veterans Admin. FacilityA.....	TB	Vet	679	496	..	...	3,231
	Gen	Vet	63	56	..	...	124
Wamego, 1,767—Pottawatomie							
Genn Hospital	Gen	City	15	10	5	67	303
Wellington, 7,246—Sumner							
Hatcher Hospital	Gen	NPAasn	30	0	7	75	533
St. Luke's Hospital	Gen	NPAasn	20	5	8	50	333
Wichita, 114,066—Sedgwick							
Coffman Hospital	Gen	Corp	15	4	2	16	261
St. Francis Hospital+A	Gen	Church	307	244	43	1,064	8,751
Sedgwick County Hospital	Gen	County	80	49	5	53	1,707
Sedgwick County Tuberculosis Sanitarium	TB	County	60	40	..	...	40
Veterans Admin. FacilityA.....	TB	Vet	246	196	..	...	2,171
Wesley Hospital+A	Gen	Church	235	169	32	753	5,092
Wichita Hospital+A	Gen	Church	105	98	20	503	3,250
Winfield, 9,506—Cowley							
St. Mary's HospitalAO	Gen	Church	50	36	6	103	1,173
William Newton Memorial HospitalAO	Gen	City	47	41	10	203	1,461
Related Institutions							
Ashland, 1,186—Clark							
Ashland Hospital	Gen	NPAasn	10	5	4	77	352
Fort Dodge, 550—Ford							
Kansas State Soldiers' Home Hospital	Inst	State	34	17	..	...	363
Lansing, 812—Leavenworth							
Kansas State Penitentiary Hospital	Inst	State	51	30	..	...	810
Manhattan, 11,650—Riley							
Kansas State College Hosp..	Inst	State	50	14	..	...	1,263
Topeka, 67,833—Shawnee							
Florence Crittenton Home...	Mat	NPAasn	20	8	18	21	29
Wichita, 114,066—Sedgwick							
Salvation Army Home and Hospital	Mat	Church	50	27	19	83	97
	Indiv		40	17	..	...	84
Suburban Rest Sanitarium..	N&M						
Winfield, 9,506—Cowley							
State Training School.....	MeDe	State	1,317	1,246	..	...	101

KENTUCKY							
Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Anchorage, 600—Jefferson	N&M	Indiv	55	37	..	...	102
	Gen	NPAasn	109	72	29	421	2,720
	GenIso	NPAasn	125	29	6	61	2,720

Key to symbols and abbreviations is on page 1071

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admis- sions †
Lynch, 10,000—Harlan							
Lynch Hospital	Gen	NPAasn	54	23	4	43	1,506
Madisonville, 8,200—Hopkins							
Hopkins County Hospital...	Gen	NPAasn	65	16	6	90	1,785
Mayfield, 8,619—Graves							
Fuller-Gilliam Hospital	Gen	Corp	25	13	4	86	784
Mayfield Hospital	Geo	NPAasn	40	17	6	91	676
Maysville, 6,572—Mason							
Haywood Hospital	Gen	NPAasn	55	29	8	133	1,685
Middlesboro, 11,177—Bell							
Middlesboro Hospital	Gen	Corp	50	30	8	107	1,215
Morganfield, 3,079—Union							
Union County Hospital.....	Gen	NPAasn	35	...		New building	
Murray, 3,773—Calloway							
Keys-Houston Clinic Hosp...	Gen	Part	27	10	8	59	500
Wm. Mason Memorial Hos- pitalo	Gen	NPAaso	60	25	5	51	932
Outwood, 50—Christian							
Veteras Admin. FacilityA...	TB	Vet	375	319	..	...	805
Owensboro, 30,245—Dayless							
Owensboro Dayless County Hospitalo	Gen	CyCo	65	55	12	376	3,435
Paducah, 33,765—McCracken							
Ewart Purcell Isolation Hospital.....	Unit of	Riverside Hospital					
Illinois Central HospitalA...	Indus	NPAasn	95	37	2	...	1,727
Riverside HospitalA	Gen	City	83	37	12	432	2,153
Paintsville, 2,324—Johnson							
Paintsville Clinic	Gen	Indiv	30	5	5	19	353
Paintsville Hospital	Gen	Corp	65	39	4	65	1,420
Paris, 6,697—Bourbon							
W. W. Massie Memorial Hos- pitalo	Gen	City	50	26	5	130	597
Pewee Valley, 625—Oldham							
Pewee Valley Sanitarium and Hospital	Gen	NPAasn	33	25	2	33	257
Pikeville, 4,185—Pike							
Methodist Hospital	Gen	Church	00	44	10	140	2,008
Pineville, 3,882—Bell							
Pineville Community Hosp..	Gen	Corp	00	40	4	50	1,230
Richmond, 7,335—Madison							
Gibson Hospital	Gen	Indiv	75	8	3	15	362
Irvine-McDowell Memorial Trachoma HospitalA	Trach	State	58	21	..	...	205
Pattie A. Clay Infirmary....	Gen	NPAasn	50	31	5	51	1,180
Russellville, 3,983—Logan							
Russellville Hospital	Gen	Indiv	15	6	4	40	403
Scottsville, 1,797—Allen							
Graves Infirmary	Gen	Indiv	17	6	2	85	263
Stanford, 1,940—Lincoln							
Stanford Hospital	Gen	Part	9	6	2	15	230
Versailles, 2,548—Woodford							
Woodford Memorial Hosp...	Gen	CyCo	34	11	6	99	389
Waverly Hills, 250—Jefferson							
Waverly Hills SanatoriumA..	TB	CyCo	501	453	..	...	452
Winechester, 8,594—Clark							
Clark County Hospital.....	Geo	NPAasn	40	18	6	35	615
Guerrant Clinic and Hospital	Gen	NPAasn	20	7	4	20	213
Related Institutions							
Barbourville, 2,420—Knox							
Logan Hospital	Gen	NPAasn	20	6	4	16	455
Fleming, 1,193—Letcher							
Fleming Hospital	Gen	Indiv	30	7	..	4	222
Frankfort, 11,462—Franklin							
State Institution for the Feeble-minded	McDe	State	769	745	..	...	48
Stewart Home Training School	McDe	Indiv	125	119	..	...	14
La Grange, 1,334—Oldham							
State Reformatory Hospital	Inst	State	109	32	..	...	1,404
Louisville, 319,077—Jefferson							
Kings Daughters Home for Incurables	Incur	NPAaso	98	95	..	...	18
Susan Speed Davis Home and Hospital	MatCh	Church	40	43	19	89	88
Princeton, 5,389—Caldwell							
Princeton Hospital	Gen	City	14	6	2	17	341
LOUISIANA							
Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admis- sions †
Abbeville, 6,678—Vermillion							
Abbeville Clinic	Gen	Part	12	4	3	161	414
Alexandria, 27,066—Rapides							
Baptist HospitalA	Gen	Church	88	60	10	331	3,415
Cuiperper-White Clinic	Gen	Part	12	...	6	Estab.	1041
Veterans Admin. FacilityA...	Gen	Vet	490	426	...	...	3,727
	TB	Vet	131	97	..	...	343
Barksdale Field, —Bossier							
Station Hospital	Gen	Army	160	127	8	66	2,379
Bayou de la Poudre							
		City	26	6	6	60	519
J		NPAasn	70	46	15	455	2,617

Key to symbols and abbreviations is on page 1071

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Houlton, 7,771—Aroostook							
Aroostook General Hospital	Gen	NPA'ssn	40	28	12	140	836
Madigan Memorial Hosp	Gen	Church	40	23	12	110	1,237
Island Falls, 1,370—Aroostook							
Emma V Milliken Memorial Hospital	Gen	NPA'ssn	14	8	5	51	374
Lewiston, 38,598—Androscooggin							
Central Maine General Hospital	Gen	NPA'ssn	173	160	28	606	4,222
	TB	NPA'ssn	31	31			63
St Mary's General Hosp	Gen	Church	150	115	2	404	3,093
Mars Hill, 1,886—Aroostook							
Mars Hill Hospital	Gen	Indiv	10	4	3	17	120
Milo, 3,000—Piscataquis							
McNaughton Hospital	Gen	Indiv	12	5	6	27	263
Old Town, 7,688—Penobscot							
Home Private Hospital	Gen	Corp	13	No data supplied			
Portland, 73,643—Cumberland							
Children's Hospital	Chil	NPA'ssn	100	77			429
Farrington Hospital	Gen	City	180	151	16	99	1,736
Dr Leighton's Private Hosp	GynOb	Indiv	14	11	12	78	462
Maine Eye and Ear Infirmary	Gen	NPA'ssn	100	116	20	462	4,140
Maine General Hospital	Gen	NPA'ssn	234	223	27	803	6,087
Queen's Hospital	Gen	Church	52	43	12	118	805
State Street Hospital	Gen	Corp	61	53	12	135	1,557
U S Marine Hospital	Gen	USPHS	72	33			611
Presque Isle, 7,339—Aroostook							
Northern Maine Sanatorium	TB	State	125	114			151
Presque Isle General Hosp	Gen	NPA'ssn	50	20	10	141	1,002
Rockland, 8,890—Knox							
Knox County General Hospital	Gen	NPA'ssn	64	36	7	110	1,046
Rumford, 10,230—Oxford							
Rumford Community Hospital	Gen	NPA'ssn	68	41	8	237	1,658
Sanford, 14,886—York							
Henrietta D Goodall Hosp	Gen	NPA'ssn	42	32	8	117	1,142
Skowhegan, 7,159—Somerset							
Redington Memorial Hosp	Gen	NPA'ssn	30	20	5	41	536
Togus, 2,350—Kennebec							
Veterans Admin Facility	Gen	Vet	300	234			1,418
Waterville, 16,688—Kennebec							
Sisters Hospital	Gen	Church	120	97	20	376	5,653
Thayer Hospital	Gen	NPA'ssn	34	26	6	93	1,094
Westbrook, 11,087—Cumberland							
Westbrook Hospital	Gen	NPA'ssn	22	10	8	120	680
Related Institutions							
Auburn, 19,817—Androscooggin							
Auburn Private Hospital	Gen	Indiv	10	2	4	42	131
Bangor, 29,822—Penobscot							
Gay Private Hospital	N&M	Indiv	18	10			148
Bar Mills, 400—York							
Buxton Holts Hospital	Gen	Corp	15	5	2	9	138
Eagle Lake, 1,891—Aroostook							
Northern Maine General Hospital	Gen	Church	45	24			704
Pownall, 570—Cumberland							
Pownall State School	MeDe	State	1,120	1,084			57
Union, 1,150—Knox							
Jones Sanitarium	N&M	Corp	30	15			21
Van Buren, 5,380—Aroostook							
Hotel Dieu Hospital	Gen	Church	10	10	4	23	333
York Village, 1,500—York							
York Hospital	Gen	NPA'ssn	21	7	7	71	785

MARYLAND

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Aberdeen Proving Ground, —Harford							
Station Hospital	Gen	Army	12	3			192
Annapolis, 13,069—Anne Arundel							
Annapolis Emergency Hospital	Gen	NPA'ssn	50	43	15	374	2,302
U S Naval Hospital	Gen	Navy	192	79			1,576
Baltimore, 80,100—Baltimore City							
Baltimore City Hospitals	Gen	City	1,300	957	80	1,900	7,438
Baltimore City Psychopathic Hospital	Unit of Baltimore City Hospitals						
Baltimore City Tuberculosis Hospital	Unit of Baltimore City Hospitals						
Baltimore Eye, Ear and Throat Charity Hospital	ENT	NPA'ssn	60	44			2,938
Beck Diagnostic Clinic	Gen	Indiv	12	7			177
Bon Secours Hospital	Gen	Church	158	170	32	762	3,597
Children's Hospital School	Orth	NPA'ssn	120	96			300
Church Home and Infirmary	Gen	Church	163	122	28	506	4,064
Franklin Square Hosp	Gen	NPA'ssn	200	142	37	1,027	4,677
Gundry Sanitarium	N&M	Indiv	45	41			20
Hospital for Women	Gen	NPA'ssn	124	99	38	936	3,220

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
James Lawrence Kernan Hospital and Industrial School for Cripple Children	Orth	NPA'ssn	103	72			243
Johns Hopkins Hospital	Gen	NPA'ssn	894	746	75	1,654	10,680
Johnston Memorial Children's Hospital	Unit of Union Memorial Hospital						
Maryland General Hospital	Gen	Church	238	208	26	629	5,116
Maryland General Hospital	Gen	Church	292	250	40	941	8,182
Mount Hope Retreat	N&M	Church	600	573			108
Philips Psychiatric Clinic	Unit of Johns Hopkins Hospital						
Presbyterian Eye, Ear and Throat Charity Hospital	ENT	Church	40	8			1,800
Provident Hospital and Free Dispensary	Gen	NPA'ssn	134	102	14	370	2,335
St Agnes' Hospital	Gen	Church	220	140	28	729	4,587
St Joseph's Hospital	Gen	Church	253	213	46	1,211	6,554
Sinal Hospital	Gen	NPA'ssn	260	210	40	843	5,481
South Baltimore General Hospital	Gen	NPA'ssn	153	111	17	480	3,448
Sydenham Hospital	Gen	City	110	36			1,362
Union Memorial Hospital	Gen	NPA'ssn	344	277	24	528	7,281
U S Marine Hospital	Gen	USPHS	731	422			5,597
University Hospital	Gen	State	435	375	50	1,453	9,289
West Baltimore General Hospital	Gen	NPA'ssn	151	110	23	578	3,001
Brentwood, 2,433—Prince Georges							
Brentwood Sanatorium	N&M	Corp	38	No data supplied			
Brunswick, 3,856—Frederick							
Schnauffer Hospital	Gen	Indiv	30	13	5	49	452
Cambridge, 10,102—Dorchester							
Cambridge Maryland Hospital	Gen	NPA'ssn	73	38	17	199	1,116
Eastern Shore State Hospital	Gen	State	500	455			161
Catonsville, 7,617—Baltimore							
Haarlem Lodge	N&M	Indiv	30	43			147
Spring Grove State Hospital	Gen	State	2,100	2,077			612
Chestertown, 2,760—Kent							
Kent and Upper Queen Anne's General Hospital	Gen	NPA'ssn	31	12	8	83	445
Crisfield, 3,908—Somerset							
Edward W McCready Memorial Hospital	Gen	County	36	17	5	72	431
Crownsville, 30—Anne Arundel							
Crownsville State Hospital	Gen	State	1,348	1,479			499
Hospital for Colored Feeble minded Children	Unit of Crownsville State Hospital						
Cumberland, 39,483—Allegany							
Allegany Hospital of the Sisters of Charity	Gen	Church	110	89	35	641	2,804
Memorial Hospital	Gen	City	166	123	30	554	4,020
Easton, 4,525—Talbot							
Emergency Hospital	Gen	NPA'ssn	107	70	21	224	2,367
Edgewood, 300—Harford							
Station Hospital	Gen	Army	36	23			75
Elkton, 3,518—Cecil							
Union Hospital of Cecil County	Gen	NPA'ssn	52	35	8	315	1,109
Fort George G Meade, —Anne Arundel							
Station Hospital	Gen	Army	113	65	5	27	1,352
Frederick, 15,892—Frederick							
Emergency Hospital	Gen	County	47	28	10	247	605
Frederick City Hospital	Gen	NPA'ssn	120	64	13	228	2,340
Frostburg, 7,609—Allegany							
Miners Hospital	Gen	State	30	23	10	140	877
Glenn Dale, 205—Prince Georges							
Glenn Dale Sanatorium	See Washington, D C						
Hagerstown, 32,491—Washington							
Washington County Hospital	Gen	NPA'ssn	142	101	27	461	3,627
Haye de Grace, 4,967—Harford							
Harford Memorial Hospital	Gen	NPA'ssn	40	21	6	178	1,005
Henryton, 30—Carroll							
Maryland Tuberculosis Sanatorium	TB	State	500	374			543
Ijamsville, 200—Frederick							
Riggs Cottage Sanitarium	N&M	Indiv	30	26			21
La Plata, 488—Charles							
Physicians Memorial Hospital	Gen	County	23	12	6	112	463
Laurel, 2,823—Prince Georges							
District Training School	See Washington, D C						
Laurel Sanitarium	N&M	Indiv	70	68			320
Leonardtown, 668—St Marys							
St Mary's Hospital	Gen	NPA'ssn	20	12	4	86	529
Mount Wilson, 225—Baltimore							
Mt Wilson Branch, Maryland Tuberculosis Sanatorium	TB	State	210	157			223
Olney, 100—Montgomery							
Montgomery County General Hospital	Gen	NPA'ssn	40	39	14	26	1,421
Perry Point, 80—Cecil							
Veterans Admin Facility	Gen	Vet	1,259	1,270			424
Prince Frederick, 200—Calvert							
Calvert County Hospital	Gen	NPA'ssn	23	15	12	142	484
Reisterstown, 2,000—Baltimore							
Mount Pleasant	TB	NPA'ssn	60	50			52
Relay, 2,016—Baltimore							
Relay Sanitarium	N&M	Part	35	22			120

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Rockville, 2,047—Montgomery Chestnut Lodge Sanitarium. N&M	Indiv		50	43	..	...	97
Salisbury, 13,313—Wicomico Moryland Tuberculosis Sanatorium, Eastern Shore	..		..	..	..	..	..
Bronch	TB	State	78	64	..	...	108
Peninsula General Hosp. A. Gen	NPAssn		177	109	30	487	3,692
Silver Spring, 7,500—Montgomery Cederoft Sanatorium	N&M	Part	42	27	..	...	247
State Sanatorium, 200—Frederick Moryland Tuberculosis Sanatorium	TB	State	510	502	..	...	622
Sykesville, 806—Carroll Springfield State Hospital+..	Ment	State	2,050	2,004	..	...	648
Takoma Park, 8,938—Montgomery Walter Reed General Hosp.	See Washington, D. C.						
Washington Sanatorium and Hospital	See Washington, D. C.						
Towson, 2,074—Baltimore Aighburth Manor	Nerv	Indiv	23	17	..	...	38
Hospital for Consumptives (Eudwood Sanatorium)	TB	NPAssn	196	191	..	...	207
Sheppard and Enoch Pratt Hospital+	N&M	NPAssn	265	257	..	...	364
Western Port, 3,563—Allegony Reeves Clinic	Gen	Part	17	11	5	50	472
Related Institutions							
Baltimore, 859,100—Baltimore City Baltimore City Jail Hosp.	Inst	City	28	10	..	...	484
Happy Hills Convalescent Home for Children	Conv	NPAssn	80	67	..	...	261
Home for Incurables	Incur	NPAssn	149	149	..	...	48
Moryland Penitentiary Hospital	Inst	State	30	22	..	...	270
Jessups, 400—Anne Arundel Maryland House of Correction Hospital	Inst	State	47	18	..	...	730
Owings Mills, 130—Baltimore Rosewood State Training School	MeDe	State	1,226	1,182	..	...	91
Rockville, 2,047—Montgomery Christ Child Form for Convalescent Children	Conv	NPAssn	35	33	..	...	117
Sparrows Point, —Baltimore Sparrows Point Hospital	Indus	NPAssn	24	2	..	...	62

MASSACHUSETTS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Acushnet (New Bedford P.O.), 4,145—Bristol Acushnet Hospital	Gen	NPAssn	55	36	17	324	1,516
Adams, 12,608—Berkshire W. B. Plunkett Memorial Hospital+	Gen	City	50	23	15	206	926
Aldenville (Chicopee Falls P.O.), —Hampden Chicopee Hospital	Gen	Indiv	35	15	6	104	...
Amesbury, 10,862—Essex Amesbury Hospital+	Gen	City	30	17	6	145	697
Arlington, 40,013—Middlesex Ring Sanatorium ond Hosp. N&M	Corp		60	42	..	...	312
Synmes Arlington Hosp. A. Gen	NPAssn		80	61	20	171	2,541
Attleboro, 22,071—Bristol Bristol County Tuberculosis Hospital	TB	County	60	52	..	...	75
Sturdy Memorial Hospital+	Gen	NPAssn	108	70	24	317	1,925
.....	Gen	NPAssn	23	14	7	132	970
drena+	Chil	NPAssn	135	108	..	...	26
Bedford, 3,807—Middlesex Veterans Admin. Facility+..	Ment	Vet	1,484	1,429	..	...	357
Belmont, 26,867—Middlesex McLeon Hospital+	N&M	NPAssn	232	208	..	...	216
Beverly, 25,537—Essex Beverly Hospital+	Gen	NPAssn	173	133	44	527	3,114
Boston, 770,816—Suffolk Adams House (Adams Nervine)	Nerv	NPAssn	15	10	..	...	45
Audubon Hospital	Gen	Corp	32	18	5	100	776
Beth Israel Hospital+	Gen	NPAssn	215	185	..	...	6,165
Boston City Hospital+	Gen	City	2,392	1,379	117	2,928	43,181
Boston Floating Hosp.+	Chil	NPAssn	50	33	..	...	990
Boston Lying-In Hosp.+	Mat	NPAssn	136	119	136	2,564	3,711
Boston Psychopathic Hospital+	Ment	State	110	97	..	...	2,043
Boston State Hospital+	Ment	State	2,474	2,321	..	...	1,158
Carney Hospital+	Gen	Church	210	172	30	692	5,111
Channing Home	TB	NPAssn	27	26	..	...	37
Children's Hospital+	Chil	NPAssn	283	196	..	...	5,701
Doctors Hospital	Gen	Corp	27	14	10	83	678
Evangeline Booth Maternity Hospital and Home+	Mat	Chureh	70	51	60	502	808
Faulkner Hospital+	Gen	NPAssn	150	111	33	589	3,354
Glenside Hospital	N&M	Corp	125	106	..	...	247
Harley Private Hospital	Gen	Corp	50	29	21	258	1,173

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
House of the Good Samaritan+	Gen	NPAssn	83	76	..	...	178
Huntington Clinic	Maintained by Massachusetts Geo. Hosp.						
Infants' Hospital	Unit of Children's Hospital						
Jewish Memorial Hospital	Gen	NPAssn	79	75	..	...	213
Joseph H. Pratt Diagnostic Hospital+	Int Med	NPAssn	43	26	..	...	1,630
Long Island Hospital+	Gen	City	578	558	5	30	1,992
Mossochussets Eye and Ear Infirmary+	ENT	NPAssn	227	138	..	...	6,702
Massachusetts General Hospital+	Gen	NPAssn	502	397	..	...	7,622
Massachusetts General Hospital, Baker Memorial+	Gen	NPAssn	284	254	46	499	6,775
Massachusetts General Hospital, Phillips House+	Gen	NPAssn	102	89	22	192	2,409
Massachusetts Memorial Hospital+	Gen	NPAssn	391	267	41	800	6,893
Massachusetts Women's Hospital+	Gen	NPAssn	60	48	22	372	1,552
New England Baptist Hospital+	Gen	NPAssn	250	188	25	198	6,189
New England Deaconess Hospital+	Gen	Church	314	286	..	...	7,531
New England Hospital for Women and Children+	Gen	NPAssn	185	117	75	1,385	3,667
Palmer Memorial Hospital+	Unit of New England Deaconess Hospital						
Peter Bent Brigham Hospital+	Gen	NPAssn	247	183	..	...	5,173
Robert Breck Brigham Hospital+	Gen	NPAssn	110	81	..	...	1,003
Robert Dawson Evans Memorial+	Unit of Massachusetts Memorial Hospitals						
St. Elizabeth's Hospital+	Gen	Church	252	184	50	1,010	5,422
St. Margaret's Hospital	Gen	Church	75	47	34	636	1,938
St. Mary's Lying-In Hospital Match Church	Chureh		48	25	28	148	180
Sonatorium Division of Boston City Hospital+	TB	City	616	306	..	...	622
U. S. Marine Hospital+	Gen	USPHS	336	164	..	...	2,076
Vincent Memorial Hospital	Gen	NPAssn	21	15	..	...	268
Bridgewater, 8,902—Plymouth Bridgewater State Hospital	See Stote Farm						
Brookton, 62,343—Plymouth Brookton Hospital+	Gen	NPAssn	126	104	20	470	2,716
Goddard Hospital+	Gen	Corp	63	57	20	515	2,136
Moore Hospital	Gen	Indiv	25	16	8	111	382
Brookline, 49,786—Norfolk Allerton Hospital	Gen	Corp	50	...	20	Reorganized	
Belleue Hospital	Gen	NPAssn	30	14	6	7	1,020
Board of Health Hospital+	Thiso	City	55	23	..	...	37
Bournewood Hospital	N&M	Indiv	16	8	..	...	3
Brooks Hospital+	Gen	NPAssn	53	45	..	...	1,469
Corey Hill Hospital+	Gen	Corp	60	49	..	...	1,593
Free Hospital for Women+	Gyn	NPAssn	101	77	..	...	2,036
Parkway Hospital	Unit of Free Hospital for Women						
Cambridge, 110,579—Middlesex Cambridge City Hospital+	Gen	City	300	196	100	1,348	6,631
Cambridge Hospital+	Gen	NPAssn	218	163	51	950	5,193
Cambridge Sanatorium	TB	City	90	87	..	...	70
Charlesgate Hospital	Gen	Corp	85	37	10	214	1,560
Chester Hospital	Gen	Corp	40	22	20	196	866
Condon, 6,381—Norfolk Mossochussets Hospital School	Orth	State	300	246	..	...	319
Chelsea, 41,259—Suffolk Captain John Adams Hospital of Soldiers' Home+	Inst	State	255	230	..	...	2,686
Chelsea Memorial Hospital+	Gen	Corp	90	64	25	315	2,131
U. S. Naval Hospital+	Gen	Navy	452	395	9	62	3,591
.....	Gen	NPAssn	63	41	20	296	1,522
.....	Gen	NPAssn	37	21	12	258	951
Valleybeed	Nerv	Indiv	20	11	..	...	155
Danvers, 14,179—Essex Hunt Memorial Hospital	Gen	City	20	11	6	81	317
Everett, 46,784—Middlesex Whidden Memorial Hospital+	Gen	NPAssn	95	96	20	396	3,210
Fall River, 115,428—Bristol Fall River General Hosp.	Gen	City	168	111	..	...	2,570
.....	TB	City	113	104	..	...	83
St. Anne's Hospital+	Gen	Church	130	83	26	381	2,716
Truesdale Hospital+	Gen	NPAssn	140	102	25	540	3,207
Union Hospital+	Gen	NPAssn	151	106	35	623	3,514
Fitchburg, 41,824—Worcester Burbank Hospital+	Gen	Corp	169	161	33	601	4,073
.....	TB	Corp	34	23	..	...	26
.....	Unit of Burbank Hospital						
F	Gen	NPAssn	150	...	...	...	...
Station Hospital	Gen	Army	60	71	..	...	1,554
Foxboro, 6,303—Norfolk Foxboro State Hospital+	Ment	Stote	1,426	1,350	..	...	242
.....	Gen	NPAssn	105	85	20	557	3,452
.....	Ment	State	1,421	1,419	..	...	193
Henry Heywood Memorial Hospital+	Gen	NPAssn	104	87	17	451	2,751

Key to symbols and abbreviations is on page 1071

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Georgetown, 1,803—Essex							
Baldpate	N&M	Corp	47	33			165
Gloucester, 24,046—Essex							
Addison Gilbert Hospital	Gen	NPA'ssn	85	72	19	322	2,134
Great Barrington, 5,824—Berkshire							
Fairview Hospital	Gen	NPA'ssn	53	35	13	134	1,302
Greenfield, 15,672—Franklin							
Franklin County Public Hospital	Gen	NPA'ssn	87	64	21	327	1,858
Groton, 2,530—Middlesex							
Groton Hospital	Gen	Corp	14	4	4	29	1,016
Hathorne, 146—Essex							
Danvers State Hospital	Ment	State	2,375	2,289			811
Haverhill, 46,752—Essex							
Benson Hospital	Gen	Indiv	26	14	2	17	313
Haverhill Municipal Hospitals (Hale)*	Gen	City	170	114	28	496	4,730
Haydenville, 1,000—Hampshire							
Hampshire County Sanatorium	TB	County	50				
Holden, 3,924—Worcester							
Holden District Hospital	Gen	NPA'ssn	32	25	6	121	938
Holyoke, 53,750—Hampden							
Holyoke Hospital	Gen	NPA'ssn	119	82	24	432	2,434
Providence Hospital	Gen	Church	168	135	32	732	3,662
Hyannis, 1,800—Barnstable							
Cape Cod Hospital	Gen	NPA'ssn	65	47	15	321	1,947
Ipswich, 6,348—Essex							
Benjamin Stiekney Cable Memorial Hospital	Gen	NPA'ssn	73	20	7	140	510
Lawrence, 81,823—Essex							
Bessie Burke Memorial Hosp	Gen	City	125	105	12	149	2,901
Clover Hill Hospital	Gen	Corp	60	44	20	538	1,791
Lawrence General Hosp	Gen	NPA'ssn	172	113	42	442	3,107
Leominster, 27,226—Worcester							
Leominster Hospital	Gen	NPA'ssn	61	46	12	326	1,890
Lowell, 101,889—Middlesex							
Lowell General Hospital	Gen	NPA'ssn	138	105	30	514	3,187
St John's Hospital	Gen	Church	175	146	30	573	4,088
St Joseph's Hospital	Gen	Church	113	97	20	469	3,057
Shaw Hospital	Gen	Indiv	20	8	12	77	200
Ludlow, 8,181—Hampden							
Ludlow Hospital	Gen	NPA'ssn	30	17	14	314	762
Lynn, 93,123—Essex							
Lynn Hospital	Gen	NPA'ssn	184	164	48	1,216	5,972
Union Hospital	Gen	NPA'ssn	56	36	22	456	1,624
Malden, 58,010—Middlesex							
Malden Hospital	Gen	NPA'ssn	207	146	36	883	4,716
Marblehead, 10,836—Essex							
Mary A Alley Emergency Hospital	Gen	City	15	11	8	68	683
Marlboro, 15,154—Middlesex							
Marlborough Hospital	Gen	NPA'ssn	63	46	23	353	1,561
Medfield, 4,384—Norfolk							
Medfield State Hospital	Ment	State	1,850	1,867			225
Medford, 63,093—Middlesex							
Lawrence Memorial Hosp	Gen	NPA'ssn	75	85	34	869	2,760
Melrose, 25,333—Middlesex							
Melrose Hospital	Gen	NPA'ssn	100	95	25	557	2,887
New England Sanitarium and Hospital	Gen	Church	135	105	17	368	2,749
Methuen, 21,880—Essex							
Mary E McGowan Memorial Hospital	Gen	Corp	28	17	8	245	798
Middleboro, 9,032—Plymouth							
Lakeville State Sanatorium	TB	State	302	262			262
St Luke's Hospital	Gen	NPA'ssn	31	17	15	148	608
Middleton, 2,348—Essex							
Essex Sanatorium	TB	County	350	377			313
	Gen	Corp	61	44	15	425	2,099
Rescued Home	ONVA						
Montague City, 630—Franklin	Gen	NPA'ssn	25	13	6	83	559
Farren Memorial Hospital	Gen	Church	74	56	12	241	1,800
Nantucket, 3,401—Nantucket							
Nantucket Cottage Hospital	Gen	NPA'ssn	23	14	5	31	558
Natick, 13,851—Middlesex							
Leonard Morse Hospital	Gen	City	61	47	14	246	1,305
Needham, 12,445—Norfolk							
Glover Memorial Hospital	Gen	City	22	15	10	79	670
New Bedford, 110,341—Bristol							
St Luke's Hospital	Gen	NPA'ssn	294	213	45	1,036	7,150
Sassaquin Sanatorium	TB	NPA'ssn	124	114			100
Union Hospital	Gen	Corp	32	29			890
Newburyport, 13,916—Essex							
Anna Jaques Hospital	Gen	NPA'ssn	52	40	10	166	1,114
Worcester Memorial Hosp	Gen	NPA'ssn	24	12	5	83	412
Newton, 69,873—Middlesex							
New England Peabody Home for Crippled Children	TbOr	NPA'ssn	100	77			28
Newton Hospital	Gen	NPA'ssn	252	166	52	832	5,373
Norfolk, 2,294—Norfolk							
State Prison Colony Hosp	Inst	State	75	35			584
North Adams, 22,213—Berkshire							
North Adams Hospital	Gen	NPA'ssn	91	57	19	325	2,066
Northampton, 24,749—Hampshire							
Cooley Dickinson Hospital	Gen	NPA'ssn	135	89	22	433	2,815
Northampton State Hosp	Ment	State	2,183	2,115			505
Veterans Admin Facility	Ment	Vet	769	757			118
North Grafton, 1,150—Worcester							
Grafton State Hospital	Ment	State	1,750	1,652			304

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
North Wilmington, 472—Middlesex							
North Reading State Sanatorium	TbChil	State	297	212	..		114
Norwood, 15,383—Norfolk							
Norwood Hospital	Gen	NPA'ssn	93	80	24	511	2,928
Oak Bluff, 1,584—Dukes							
Martha's Vineyard Hosp	Gen	NPA'ssn	29	12	10	77	432
Palmer, 9,149—Hampden							
Minson State Hospital	Epil	State	1,665	1,541			140
Wing Memorial Hospital	Gen	NPA'ssn	27	16	8	132	1,175
Peabody, 21,711—Essex							
Josiah B Thomas Hospital	Gen	City	65	30	15	192	1,099
Pittsfield, 49,684—Berkshire							
Hillcrest Hospital	Gen	NPA'ssn	42	33	10	127	952
House of Mercy Hosp	Gen	NPA'ssn	202	114	33	442	3,980
St Luke's Hospital	Gen	Church	156	125	33	692	3,550
Plymouth, 13,100—Plymouth							
Jordan Hospital	Gen	NPA'ssn	65	40	10	240	1,381
Pocasset, 365—Barnstable							
Barnstable County Sanatorium	Gen	County	35	27			242
	TB	County	35	34			49
Quincy, 75,810—Norfolk							
Quincy City Hospital	Gen	City	274	237	50	1,268	8,308
Rutland, 2,152—Worcester							
Jewish Tuberculosis Sanatorium	TB	NPA'ssn	30	25			33
Rutland State Sanatorium	TB	State	365	278			268
Rutland Heights, 800—Worcester							
Veterans Admin Facility	TB	Vet	272	258			380
	Vet	Vet	196	140			1,268
Salem, 41,213—Essex							
North Shore Babies' Hosp	Chil	NPA'ssn	50	31			494
Salem Hospital	Gen	NPA'ssn	236	158	49	756	4,794
Sharon, 3,737—Norfolk							
Sharon Sanatorium	Chil	NPA'ssn	20				Reorganized
Somerville, 102,177—Middlesex							
Somerville Hospital	Gen	NPA'ssn	115	93	30	764	3,462
South Braintree, —Norfolk							
Norfolk County Hospital	TB	County	168	165			135
Southbridge, 16,875—Worcester							
Harrington Memorial Hosp	Gen	NPA'ssn	40	25	12	213	970
South Dartmouth, 1,815—Bristol							
Sole & Mar Orthopedic Hospital for Children	Orth	NPA'ssn	40	30			22
South Hanson, 831—Plymouth							
Plymouth County Hospital	TB	County	140	90			61
Springfield, 149,554—Hampden							
Health Department Hosp	TbIso	City	100	61			387
Mersey Hospital	Chil	Church	315	236	50	1,365	7,847
Shriners Hospital for Crippled Children	Orth	NPA'ssn	60	60			701
Springfield Hospital	Gen	NPA'ssn	251	229	4	2	0,586
Wesson Maternity Hosp	Mat	NPA'ssn	62	62	66	1,585	1,755
Wesson Memorial Hosp	Gen	NPA'ssn	116	74			2,096
State Farm, 200—Plymouth							
Bridgewater State Hospital	Ment	State	962	890			70
Stockbridge, 1,815—Berkshire							
Austen Riggs Foundation	Nerv	NPA'ssn	50	21			256
Taunton, 87,395—Bristol							
Morton Hospital	Gen	NPA'ssn	62	54	12	399	2,534
Taunton State Hospital	Gen	State	1,824	1,850			597
Tewksbury, 6,261—Middlesex							
Tewksbury State Hospital and Infirmary	Gen	State	3,304	2,371	40	88	2,316
	TB	State	156	102			117
Vineyard Haven, 1,500—Dukes							
U S Marine Hospital	Gen	LSPHS	24	15			117
Waltham, 40,020—Middlesex							
Metropolitan State Hosp	Ment	State	1,996	1,907			86
Middlesex County Sanatorium	TB	County	380	347			317
Waltham Contagious Hosp	Unit of	Waltham Hospital	165	96	53	610	2,881
Waltham Hospital	Gen	NPA'ssn	165	96	53	610	2,881
Ware, 7,557—Hampshire							
Mary Lane Hospital	Gen	NPA'ssn	40	30	18	356	1,015
Wareham, 6,364—Plymouth							
Tobey Hospital	Gen	NPA'ssn	49	28	16	120	1,473
Webster, 13,156—Worcester							
Webster District Hospital	Gen	NPA'ssn	30	30	8	245	795
Wellesley, 15,127—Norfolk							
Channing Sanatorium	N&M	Corp	35	25			46
Weswall Sanatorium	N&M	Indiv	30	24			20
Westborn, 6,462—Worcester							
Westborn State Hospital	Ment	State	1,718	1,671			495
Westfield, 18,793—Hampden							
Noble Hospital	Gen	NPA'ssn	85	51	15	297	2,551
Westfield State Sanatorium	TB	State	189	174			172
	Cancer	State	50	41			695
Westwood, 3,376—Norfolk							
Westwood Lodge	N&M	Corp	21	14			37
	Gen	NPA'ssn	71	62	24	755	3,113
Winchendon, 6,575—Worcester							
Miller's River Hospital	Gen	Corp	25	15	8	81	694
	Gen	NPA'ssn	69	54	20	252	1,607
	Gen	Army	115	65	6	71	477
	Gen	NPA'ssn	44	41	20	425	1,482

Key to symbols and abbreviations is on page 1071

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Henry Ford Hospital*+A+O..	Gen	NPAssn	503	431	36	935	15,208
Herman Kiefer Hospital*+A+O..	TB	NPAssn	56	51	..	..	60
	Mat	City	810	798	..	..	1,173
	Iso	City	61	56	80	1,817	2,024
		City	486	157	..	..	2,836
Hoodler Convalescent Hospital and Rest Home.....	Conv	NPAssn	25	9	..	..	280
Kretschmar Diagnostic Clinic and Hospital.....	Gen	NPAssn	12	4	4	36	370
Lincoln HospitalA.....	GenTb	NPAssn	90	67	20	521	2,143
Marr General Hospital.....	Gen	NPAssn	35	25	12	350	921
Martin Place Hospital.....	Gen	NPAssn	10	6	3	17	216
McGregor Health Foundation	Conv	NPAssn	31	22	..	..	346
Mercy General Hospital.....	Gen	Indiv	46	30	6	43	228
Michigan Mutual HospitalA..	Indus	NPAssn	42	18	..	..	696
Miriam Memorial Hospital... Unit of Grace Hospital							
Mt. Carmel Mercy Hosp.*+A+O	Gen	Church	325	311	60	2,322	10,875
Parkside Hospital*+A+O.....	Gen	NPAssn	52	35	12	225	1,295
Providence Hospital*+A+O.....	Gen	Church	324	310	100	2,822	11,602
St. Aubin General Hospital.....	Gen	Indiv	48	10	5	20	376
St. Joseph's Mercy Hosp.*+A+O	Gen	Church	185	158	65	1,650	7,150
St. Mary's Hospital*+A+O.....	Gen	Church	315	260	74	1,441	9,105
Starota General Hospital.....	Gen	NPAssn	100	79	28	598	3,907
Sharut Hospital*+A.....	Gen	Indiv	85	65	..	..	1,788
Station Hospital.....	Gen	Army	60	44	..	..	513
Trinity HospitalA.....	Gen	NPAssn	125	95	22	299	2,403
U. S. Marine Hospital*+A.....	Gen	USPHS	291	169	..	..	2,381
Warren Diagnostic Hospital	Gen	Indiv	18	14	3	38	410
Wayne Diagnostic Hospital	Gen	NPAssn	50	45	..	..	560
West Fort Hospital.....	Gen	Indiv	30	10	..	..	120
William Booth Memorial Hospital.....	Mat	Church	35	18	43	568	719
Woman's Hospital*+A+O.....	Gen	NPAssn	242	193	100	3,043	8,213
Dowagiac, 5,007—Cass							
Lee Memorial Hospital.....	Gen	Church	22	13	5	121	603
Durand, 3,127—Shiawassee							
Durand Hospital.....	Gen	NPAssn	13	9	5	72	342
East Grand Rapids (Grand Rapids P.O.), 4,899—Kent							
Burleson Hospital.....	Proct	Corp	20	14	..	..	389
Eaton Rapids, 3,060—Eaton							
Harriet Chapman Memorial Hospital.....	Gen	Part	12	5	3	3	140
Edmore, 825—Montcalm							
Edmore Hospital.....	Gen	Indiv	20	8	5	48	344
Eloise, 1,700—Wayne							
Eloise Hosp. and Infirmary*+A	Ment	County	3,768	3,785	..	..	4,528
	GenChr	County	6,432	4,141	..	..	0,757
William J. Seymour Hospital*+A.....	Acute	General Unit of Eloise Hospital and Infirmary					
Escanaba, 14,830—Delta							
St. Francis Hospital.....	Gen	Church	85	77	20	521	2,141
Flint, 151,543—Genesee							
Hurley Hospital*+A+O.....	Gen	City	332	295	50	1,258	9,995
St. Joseph HospitalA.....	Gen	Church	240	168	60	1,440	7,346
Women's HospitalA.....	Gen	NPAssn	40	32	25	692	1,230
Fort Custer, Kalamazoo							
Veterans Admin. Facility*+A... Ment	Vet		1,538	1,176	..	..	1,504
Freimont, 2,520—Newaygo							
Gerber Memorial Hospital..	Gen	City	23	12	5	116	3,701
Gaylord, 2,055—Otsego							
Northern Michigan Tuberculosis SanatoriumA.....	TB	State	130	127	..	..	119
Gladwin, 1,600—Gladwin							
Gladwin Hospital.....	Gen	Part	10	6	4	62	385
Goodrich, 470—Genesee							
Goodrich General HospitalA..	Gen	NPAssn	28	22	7	98	1,005
Grand Haven, 8,799—Ottawa							
Grand Haven Municipal Hospital.....	Gen	City	47	18	8	130	714
Grand Rapids, 164,292—Kent							
Blodgett Memorial Hospital*+A+O.....	Gen	NPAssn	140	114	30	730	4,216
Butterworth Hospital*+A+O..	Gen	NPAssn	224	171	48	1,278	6,594
Christian Psychopathic Hospital.....	N&M	NPAssn	307	307	..	..	369
City General Hospital.....	Gen	City	22	10	..	..	322
Ferguson-Drostie-Ferguson Sanatorium.....	Proct	Corp	33	24	..	..	1,123
St. Mary's Hospital*+A+O.....	Gen	Church	225	189	56	1,186	6,713
Sunshine Sanatorium.....	TB	City	126	120	..	..	131
Swilling, 3,124—Cranford							
Mercy HospitalA.....	Gen	Church	45	22	5	85	982
Greenville, 5,321—Montcalm							
United Memorial Hospital... Gen	NPAssn		30	13	6	124	588
Hamtramck, 49,830—Wayne							
St. Francis HospitalA.....	Gen	Church	115	75	31	838	4,540
Hancock, 5,554—Houghton							
St. Joseph's HospitalA+O.....	Gen	Church	78	54	16	197	1,303
Hart, 1,922—Oceana							
Oceana Hospital.....	NPAssn		20	9	6	114	900
Hartford, 1,694—Van Buren							
Van Buren County Hospital	County		30	25	3	12	351
Hastings, 5,173—Barry							
Pennock Hospital.....	Gen	NPAssn	32	22	8	200	1,296
Hazel Park, Oakland							
Melene Melneke Hospital....	Gen	Indiv	12	7	8	100	400
Highland Park, 50,810—Wayne							
Highland Park General Hospital*+A+O.....	Gen	City	165	161	35	1,223	5,660

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Hillsdale, 6,381—Hillsdale							
Hillsdale Community Health CenterA.....	Gen	City	65	25	12	196	1,140
Holland, 14,616—Ottawa							
Holland City Hospital.....	Gen	City	48	30	15	304	1,406
Houghton, 3,693—Houghton							
Copper Country Sanatorium	TB	County	66	62	..	..	81
Howell, 3,748—Livingston							
McPherson Memorial Hosp... Gen	City		24	14	8	191	656
Michigan State Sanatorium*+A.....	TB	State	476	375	..	..	318
Ionia, 6,392—Ionia							
Ionia State Hospital.....	Ment	State	1,025	985	..	..	136
Iron Mountain, 11,080—Dickinson							
Iron Mountain General Hospital.....	Gen	NPAssn	28	19	6	204	991
Ironwood, 13,369—Gogebie							
Grand View HospitalA.....	Gen	County	63	45	12	200	1,860
	TB	County	56	42	..	..	34
Neyport Hospital.....	Gen	NPAssn	13	10	5	121	333
Twin City Hospital.....	Gen	Indiv	21	No data supplied			
Ishpeming, 9,491—Marquette							
Ishpeming HospitalA.....	Gen	NPAssn	53	46	12	215	1,172
Jackson, 49,656—Jackson							
W. A. Foote Memorial Hospital*+A+O.....	Gen	City	134	120	22	804	6,100
Jackson County Sanatorium	TB	County	68	66	..	..	68
Mercy Hospital*+A+O.....	Gen	Church	125	69	25	661	3,338
Kalamazoo, 51,007—Kalamazoo							
Borgess HospitalA+O.....	Gen	Church	214	120	27	710	4,686
Bronson Methodist Hosp.A+O	Gen	Church	140	91	30	827	4,142
Fairmount HospitalA.....	TB	County	72	50	..	..	61
	Iso	County	21	4	..	..	96
Kalamazoo State Hosp.*+O... Ment	State		2,939	2,944	..	..	569
Lakeview, 824—Montcalm							
Kelsey Hospital.....	Gen	Part	20	8	4	115	623
Lansing, 78,753—Ingham							
Edward W. Sparrow Hospital*+A+O.....	Gen	NPAssn	135	132	28	1,270	5,494
Ingham Sanatorium*+A.....	TB	County	135	125	..	..	232
St. Lawrence Hospital*+A+O..	Gen	Church	169	122	30	1,120	5,745
Lapeer, 5,365—Lapeer							
Lapeer City Hospital.....	Gen	Part	18	7	4	33	395
Lapeer State Hoise and Training School.....	MeDe	State	3,938	3,772	6	4	420
Laurium, 3,929—Houghton							
Calumet Public Hospital....	Gen	NPAssn	30	15	10	177	791
Ludington, 8,700—Mason							
Paulina Stearns Hospital....	Gen	NPAssn	46	23	6	123	934
Manistee, 8,694—Manistee							
Mercy Hospital and SanatoriumA.....	Gen	Church	40	26	10	112	1,304
Manistique, 5,399—Schoolcraft							
Shaw General Hospital.....	Gen	Indiv	20	13	10	141	402
Marquette, 15,928—Marquette							
Morgan Heights Sanatorium*+A.....	TB	County	80	75	..	..	79
St. Luke's HospitalA.....	Gen	NPAssn	110	120	12	247	3,399
St. Mary's Hospital.....	Gen	Church	60	62	0	224	1,151
Marshall, 5,233—Calhoun							
Oaklawn Hospital.....	Gen	NPAssn	18	13	7	156	629
Mason, 2,867—Ingham							
Corsaut Hospital.....	Gen	Indiv	12	8	6	51	319
Menominee, 10,230—Menominee							
St. Joseph's Hospital.....	Gen	Church	53	47	13	328	2,220
Milan, 2,340—Washtenaw							
Federal Correctional Institution.....	Inst	USPHS	21	12	..	..	375
Monroe, 18,478—Monroe							
Mercy HospitalA.....	Gen	Church	56	53	15	369	1,851
Monroe Hospital.....	Gen	NPAssn	61	53	16	311	2,779
Morenci, 1,845—Lenawee							
Blanchard Hospital.....	Gen	NPAssn	15	6	6	50	356
Mt. Clemens, 14,389—Macomb							
St. Joseph Sanatorium and HospitalA.....	Gen	Church	116	81	31	568	3,278
Mt. Pleasant, 8,412—Isabella							
McArthur-Strange Hospital..	Gen	Part	25	1	6	12	100
Mt. Pleasant Community Hospital.....	Gen	NPAssn	20	19	4	151	691
Mumfries, 4,409—Aiger							
Mumfries Hospital.....	Gen	NPAssn	22	11	4	130	500
Muskegon, 47,697—Muskegon							
Hackley HospitalA.....	Gen	NPAssn	105	78	17	597	3,149
Mercy Hospital*+A+O.....	Gen	Church	101	84	30	1,130	4,993
Muskegon County SanatoriumA.....	TB	County	85	75	..	..	66
Newberry, 2,792—Lucas							
Newberry Clinic Hospital... Gen	Part		20	14	7	90	375
Newberry State Hospital....	Ment	State	1,350	1,357	..	..	291
Niles, 11,325—Berrien							
Pawling Hospital.....	Gen	NPAssn	39	26	0	361	1,178
Northville, 3,032—Wayne							
East Lawn Sanatorium.....	TB	Corp	95	79	..	..	78
Sessions Private Hospital....	Gen	Part	23	12	0	373	4,390
Win. H. Maybury Sanatorium (Detroit Municipal Tuberculosis Sanatorium)*+A.....	TB	City	843	814	..	..	719
Norway, 3,728—Dickinson							
Penn Iron Mining Company Hospital.....	Gen	NPAssn	14	7	7	111	599
Omer, 295—Arenac							
Omer Hospital.....	Gen	Indiv	12	5	5	21	291

MICHIGAN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Business	Number of Births	Admissions †
Alma, 7,202—Gratiot							
Michigan Masonic Home and Hospital	Inst	NPAasn	45	27	..	...	180
Coldwater, 7,343—Branch							
Coldwater State Home and Training School	MeDe	State	797	287	..	...	323
Crystal Falls, 2,641—Iron							
Iron County Infirmary	Inst	County	14	12	..	...	161
Detroit, 1,623,452—Wayne							
Burns Home Sanitarium....	TB	Indiv	150	...	..	...	249
DeNike Sanitarium	Alcoh	Corp	95	91	..	...	333
Doctor's Hospital	Conv	Indiv	35	30	..	...	145
East Grand Rapids (Grand Rapids P.O.), 4,889—Kent							
O'Keefe Sanitarium	N&M	Corp	28	18	..	...	50
Farmington, 1,510—Oakland							
Children's Hospital Conval- cent Home	Conv	NPAasn	200	105	..	...	357
Ferndale, 22,523—Oakland							
Ardmore Hospital	Gen	Indiv	14	9	8	225	546
Flint, 151,543—Genesee							
Genesee County Hospital and Infirmary	Gen	County	82	76	15	111	676
Grand Rapids, 164,292—Kent							
Kent County Receiving Hosp. Ment		County	32	11	..	...	443
Mary Free Bed Guild Conva- lescent Home	Orth	NPAasn	100	102	..	...	360
Municipal Isolation Hosp....	Iso	City	30	6	..	...	121
Salvation Army Evangeline Booth Home and Hospital Mat		Church	40	27	25	111	129
Ionia, 6,392—Ionia							
Michigan Reformatory	Inst	State	22	12	..	...	580
Jackson, 49,656—Jackson							
Florence Crittenton Home and Hospital	Mat	NPAasn	25	17	12	38	51
Jackson County Isolation Hospital	Iso	County	35	8	..	...	221
Southern Michigan Prison Hospital	Inst	State	200	112	..	...	2,450
Lansing, 78,753—Ingham							
Boys' Vocational School and Hospital	Inst	State	50	9	..	...	552
Lansing City Hospital.....	Iso	CyCo	48	7	..	...	306
Marquette, 15,628—Marquette							
Marquette Branch Prison Hospital	Inst	State	24	5	..	...	123
Mt. Clemens, 14,389—Macomb							
Sigma Gamma Hosp. School Orth		NPAasn	50	43	..	...	123
Mt. Pleasant, 8,418—Isabella							
Mt. Pleasant State Home and Training School	MeDe	State	345	317	..	...	32
Northville, 3,082—Wayne							
Wayne County Training School	MeDe	County	835	641	..	...	149
Otter Lake, 515—Lapeer							
American Legion Children's Billet	TB	NPAasn	120	101	..	...	255
P	Inst	County	225	93	..	...	941
P							
Port Huron Emergency Hos- pital	Iso	City	22	4	6	1	105
S	Gen	Indiv	8	3	3	51	165
T	Gen	City	10	5	3	47	210

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Buildings	Number of Births	Admissions †
Ada, 1,938—Norman Norman County Memorial Hospital	Gen	NPAsgn	11	6	3	83	224
Adrian, 1,066—Nobles Adrian Hospital	Gen	NPAsgn	14	6	6	95	204
Alg-wah-ching, 15—Cass Minnesota State Sanator-	TB	State	480	402	459
"	Gen	NPAsgn	72	63	14	337	3,273
"	Gen	NPAsgn	20	11	6	63	376
"	Gen	Indiv	20	14	6	86	540
Anoka, 6,426—Anoka "	Gen	Indiv	12	6	6	109	275
"	Ment	State	1,490	1,424	89
"	Gen	Indiv	20	11	5	30	331
"	Gen	Church	130	53	25	465	2,476
"	TB	County	45	43	41
Bemidji, 9,427—Beltrami Lutheran Hospital	Gen	NPAsgn	60	45	12	288	2,015
Benson, 2,729—Swift Swift County Hospital	Gen	NPAsgn	20	12	5	148	677

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Hutchinson, 3,857—McLeod							
Hutchinson Community Hospital	Gen	NPAssn	25	20	8	280	833
Jackson, 2,840—Jnekon							
Halloran Hospital	Gen	Indiv	18	10	6	95	380
Lake City, 3,204—Winasha							
Lake City Hospital	Gen	NPAssn	30	18	8	96	732
Lake Park, 654—Becker							
Sand Beach Sanatorium	TB	Counties	46	34	..	...	34
Litchfield, 3,920—Meeker							
Litchfield Hospital	Gen	NPAssn	43	30	9	189	1,013
Little Falls, 6,047—Morrison							
St Gabriel's Hospital	Gen	Church	90	30	12	267	1,391
Littlefork, 608—Koochiebng							
Littlefork Hospital	Gen	NPAssn	22	13	8	128	611
Long Prairie, 2,311—Todd							
Long Prairie Hospital	Gen	NPAssn	20	...	..	Reorganized	
Luverne, 3,114—Rock							
Luverne Hospital	Gen	NPAssn	16	7	6	136	526
Madison, 2,312—Lac qui Parle							
Ebenezer Lutheran Hosp	Gen	Church	20	13	7	88	401
Mahnomen, 1,429—Mnnomen							
Mahnomen Hospital	Gen	Indiv	15	13	4	37	294
Mankato, 15,654—Blue Earth							
Immanuel Hospital	Gen	Church	75	52	15	335	1,457
St Joseph's Hospital	Gen	Church	90	47	18	326	1,614
Marshall, 4,690—Lyon							
Ann Maria Memorial Hosp.	Gen	Indiv	12	7	6	97	269
Marshall Hospital	Gen	NPAssn	30	10	5	47	356
Meiose, 2,015—Stearns							
Meiose Hospital	Gen	Indiv	11	6	4	30	710
Minneapolis, 492 370—Hennepin							
Abbott Hospital	Gen	Church	140	131	22	590	5,201
Asbury Hospital	Gen	Church	140	100	18	533	4,441
Eitel Hospital	Gen	NPAssn	120	102	18	444	5,231
Elliot Memorial Hospital	Unit of University Hospitals						
Fairview Hospital	GenTb Church	155	116	30	760	4,757	
Franklin Hospital	ChrConv NPAssn	60	56	..	...	568	
George Chase Christian Memorial Cancer Institute	Unit of University Hospitals						
Harriet Walker Hospital	NPAssn	72	50	40	160	160	
Janney Children's Hospital	Unit of Abbott Hospital						
Lutheran Deaconess Home and Hospital	Gen	Church	120	111	30	721	4,024
Maternity Hospital	Mat NPAssn	36	29	43	923	1,130	
Minneapolis General Hospital	Gen	City	610	462	55	1,079	11,320
Minnesota General Hospital	Sec University Hospitals						
Northwestern Hospital	Gen NPAssn	230	143	50	702	5,420	
Ripley Memorial Hospital	Unit of Maternity Hospital						
St. Andrew's Hospital	Gen	Church	82	58	18	331	2,780
St. Barnabas Hospital	Gen	NPAssn	135	103	30	791	4,680
St. Mary's Hospital	Gen	Church	270	212	45	1,132	7,778
Shriner's Hospital for Crippled Children	Orth NPAssn	60	50	..	...	199	
Swedish Hospital	Gen	NPAssn	240	244	50	1,321	9,050
Todd Memorial Eye, Ear, Nose and Throat Hospital	Unit of University Hospitals						
University Hospitals	Gen State	475	367	23	383	8,850	
Veterans Adm. Facility	Gen Vet	478	415	..	...	4,936	
William Henry Eustis Children's Hospital	TB Vet	179	137	..	...	1,851	
Montevideo, 5,220—Chippewa	Unit of University Hospitals						
Montevideo Hospital	Gen	NPAssn	50	40	10	249	1,705
Moorhead, 9,491—Clay							
St. Ansgars Hospital	Gen	Church	50	33	10	233	1,355
Moose Lake, 1,432—Carlton							
Moose Lake Community Hospital	Gen	Indiv	13	6	3	67	232
Moose Lake State Hospital	Ment	State	1,000	881	..	...	414
Morris, 3,214—Stevens							
Morris Hospital	Gen	Indiv	14	7	4	56	247
Stevens County Hospital	Gen	NPAssn	18	11	5	123	494
Mountain Lake, 1,745—Cottonwood							
Bethel Hospital	Gen	Church	23	10	8	105	363
Chloe Hospital	Gen	Part	30	16	..	...	560
New Prague, 1,645—Le Sueur							
New Prague Community Hospital	Gen	NPAssn	20	9	6	81	352
New Ulm, 8,743—Brown							
Loretto Hospital	Gen	Church	45	32	10	182	930
Union Hospital	Gen	NPAssn	60	40	12	196	1,213
Nopemng, 75—St. Louis							
Nopemng Sanatorium	TB	County	280	261	..	...	501
Northfield, 4,533—Rice							
Northfield City Hospital	Gen	City	26	14	10	172	662
Oak Terrace, 200—Hennepin							
Christian Memorial Tuberculosis	Unit of Glen Lake Sanatorium						
	TB	County	691	572	..	...	453
	Gen	Church	20	9	4	52	423
Owatonna City Hospital	Gen	City	46	32	10	201	1,263
Parkers Prairie, 781—Otter Tail							
Leibold Hospital	Gen	Indiv	16	6	4	65	254
Perham, 1,534—Otter Tail							
St. James' Hospital	Gen	Church	40	19	6	151	778
Pine City, 1,718—Pine							
Lakeside Memorial Hospital	Gen	NPAssn	20	13	6	74	462
Pine River, 574—Cass							
Pine River Hospital	Gen	Indiv	20	17	5	54	515

Key to symbols and abbreviations is on page 107i

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Pipestone, 4,682—Pipestone							
Ashton Memorial Hospital..	Gen	NPAasn	45	31	10	214	1,490
Pokegama, 59—Pine							
Pokegama Sanatorium.....	GenTb	NPAasn	42	21	5	40	298
Princeton, 1,865—Mille Lacs							
Northwestern Hospital	Gen	Indiv	25	8	4	37	407
Puposky, 75—Beltrami							
Lake Julia Tuberculosis Sana- torium	TB	Counties	57	51	..	..	60
Redlake, 150—Beltrami							
Redlake Indian Hospital....	Gen	IA	27	16	6	80	562
Red Wing, 9,962—Goodhue							
Red Wing Hospital.....	Gen	City	40	30	9	97	805
St. John's Hospital.....	Gen	NPAasn	80	53	15	339	2,174
Redwood Falls, 3,270—Redwood							
Redwood Falls Hospital....	Gen	Part	15	8	4	73	515
Richmond, 634—Stearns							
Richmond Hospital	Gen	NPAasn	12	4	4	57	357
Rochester, 26,312—Olmsted							
Colonial Hospital.....	Gen	Corp	258	229	..	1	8,328
Kahler Hospital.....	Gen	Corp	126	82	..	..	3,443
Rochester State Hospital... Ment	State	State	1,631	1,550	..	..	693
St. Mary's Hospital.....	Gen	Church	743	518	60	661	13,056
Worral Hospital.....	SkCa	ENT Corp	183	134	..	..	7,378
Roseau, 1,775—Roseau							
Budd Hospital	Gen	NPAasn	25	10	3	66	465
Rush City, 1,020—Chisago							
Rush City Hospital.....	Gen	City	20	..	7	Estab.	1941
St. Cloud, 24,173—Stearns							
Minnesota State Reformatory Hospital	Inst	State	30	15	..	..	497
St. Cloud Hospital.....	Gen	Church	212	161	30	724	5,076
St. Veterans Adm. Facility.....	Ment	Vet	1,087	1,071	..	..	229
St. James, 3,400—Watsonwan							
St. James Hospital.....	Gen	Church	26	20	10	114	694
St. Paul, 287,736—Ramsey							
Ancker Hospital.....	Gen	CyCo	650	400	55	500	9,960
Bethesda Hospital.....	TB	CyCo	200	194	..	..	119
Charles T. Miller Hosp.....	Gen	Church	141	132	25	1,102	5,550
Children's Hospital.....	Chil	NPAasn	220	178	30	892	6,532
Children's Hospital.....	Chil	NPAasn	65	32	..	..	1,044
Gillette State Hospital for Crippled Children.....	Orth	State	250	208	..	..	761
Midway Hospital.....	Gen	Church	100	90	25	680	3,426
Mounds Park Hospital.....	Gen	Church	108	97	12	295	1,983
Northern Pacific Beneficial Association Hospital.....	Gen	NPAasn	135	85	12	122	2,633
Ramsey County Tuberculosis Pavilion.....	Unit	of Ancker Hospital					
St. John's Hospital.....	Gen	Church	63	49	15	278	2,200
St. Joseph's Hospital.....	Gen	Church	250	209	32	1,002	8,677
St. Luke's Hospital.....	Gen	NPAasn	150	No data supplied			
Salvation Army Booth Me- morial Hospital.....	Mat	Church	75	42	11	108	126
West Side General Hospit.....	IA	Church	55	45	16	328	1,823
St. Peter, 5,870—Neelot							
Community Hospital	Gen	City	29	14	12	225	718
St. Peter State Hospital.....	Ment	State	2,306	2,175	..	..	607
Shakopee, 2,418—Scott							
St. Francis Hospital.....	Gen	Church	13	12	5	138	538
Shakopee Hospital	Gen	Indiv	16	6	0	15	286
Slayton, 1,587—Murray							
Home Hospital	Gen	NPAasn	25	16	10	95	590
Springfield, 2,361—Brown							
St. John's Hospital.....	Gen	Church	23	12	5	128	644
Spring Grove, 967—Houston							
Spring Grove Hospital.....	Gen	Corp	15	6	5	77	366
Staples, 2,652—Todd							
Municipal Hospital	Gen	City	23	10	5	66	376
Starbuck, 972—Pope							
Minnewaska Hospital	Gen	NPAasn	15	11	4	63	303
Stillwater, 7,013—Washington							
Lakeview Memorial Hosp.....	Gen	CyCo	42	25	8	220	1,057
Minnesota State Prison Hos- pital.....	Inst	State	65	19	..	..	576
Thief River Falls, 6,019—Pennington							
Mercy Hospital	Gen	NPAasn	25	17	9	228	794
Oakland Park Sanatorium... TB	Counties	Counties	65	53	..	..	34
St. Luke's Hospital.....	Gen	NPAasn	39	20	6	63	744
Traey, 3,085—Lyon							
Clinic Hospital	Gen	Part	14	6	5	50	283
Traey Hospital	Gen	NPAasn	33	17	8	108	757
Truman, 984—Martia							
Truman Hospital	Gen	Indiv	9	4	3	42	162
Two Harbors, 4,046—Lake							
Two Harbors Hospital.....	Gen	Part	30	19	6	107	630
Tyler, 1,005—Lincoln							
Tyler Hospital	Gen	City	36	17	10	165	800
Virginia, 12,264—St. Louis							
Virginia Memorial Hospital. Gen	City	City	102	36	23	325	1,578
Virginia Memorial Hos- pital.....	TB	Counties	30	24	..	..	23
Virginia Memorial Hos- pital.....	Gen	Church	59	18	6	96	667
Virginia Memorial Hos- pital.....	Gen	Indiv	18	8	4	27	287
Fair Oaks Lodge Sanatorium TB	Counties	Counties	36	34	..	..	23
Wesley Hospital.....	Gen	Church	43	25	10	194	1,079
Walker, 939—Cass							
Walker Hospital	Gen	Indiv	16	4	4	50	196
Warren, 1,639—Marshall							
Warren Hospital.....	Gen	Church	30	14	6	81	3,232
Warroad, 1,309—Roseau							
Warroad Hospital	Gen	City	21	11	5	55	403

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Waseen, 4,270—Waseen							
Waseen Memorial Hospital..	Gen	City	28	16	11	172	661
White Earth, 350—Becker							
White Earth Indian Hosp...	Gen	IA	22	18	8	160	643
Willmar, 7,623—Kandiyohi							
Rice Memorial Hospital.....	Gen	City	35	31	12	295	1,332
Willmar State Hospital.....	Ment	State	1,461	1,423	..	..	291
Windom, 2,807—Cottonwood							
Windom Hospital	Gen	NPAasn	15	10	6	83	397
Winnebago, 1,992—Faribault							
Winnebago Community Hos- pital	Gen	Part	12	6	4	71	237
Winona, 22,490—Winona							
Winona General Hospital.....	Gen	NPAasn	112	55	20	418	2,307
Worthington, 5,818—Nobles							
Southwestern Minnesota Sana- torium	TB	Counties	54	50	..	..	31
Worthington Hospital	Gen	Part	33	21	12	242	1,665
Related Institutions							
Buhl, 1,600—St. Louis							
Range Hospital	Gen	County	44	37	..	..	569
Ellsworth, 600—Nobles							
Ellsworth Hospital	Gen	Indiv	10	4	3	23	91
Ely, 5,970—St. Louis							
Detention Hospital	Iso	City	16	1	..	..	8
Hastings, 6,602—Dakota							
St. Francis Hospital.....	Gen	NPAasn	25	15	4	35	231
Madelia, 1,652—Watsonwan							
Madelia Hospital	Gen	City	13	4	4	41	123
Minneapolis, 492,378—Hennepin							
Glenwood Hills Hospitals....	N&M	NPAasn	58	33	..	..	277
Homewood Hospital.....	Unit of Glenwood Hills Hospitals						
Lymanhurst Health Cent. Card City	Chil	Chil	40	20	..	..	106
Minneapolis Sanitarium.....	N&M	Indiv	24	21	..	..	42
Minnesota Soldiers' Home							
Hospital	Inst	State	85	63	..	..	311
Parkview Sanatorium	Chr	City	175	139	..	..	763
Rest Hospital	N&M	Part	19	0	..	..	165
Vocational Nursing Home....	Conv	NPAasn	42	42	..	..	84
Women's Welfare League							
Home for Convalescents..	Conv	NPAasn	25	17	..	..	76
Neollet, 434—Neollet							
Neollet Hospital	Gen	Indiv	10	2	3	25	123
Owatonna, 8,694—Steele							
Minnesota State Public School Hospital	Inst	State	50	16	..	..	827
Pelican Rapids, 1,560—Otter Tail							
Dr. Boyesen's Hospital.....	Gen	Indiv	8	2	4	47	116
Pelican Rapids Hospital.....	Gen	Indiv	7	3	3	50	82
Pipestone, 4,682—Pipestone							
Pipestone General Indian Hospital	Gen	IA	42	20	4	21	295
Red Wing, 0,002—Goodhue							
Minnesota State Training School for Boys.....	Inst	State	36	14	..	..	1,074
St. Paul, 287,736—Ramsey							
Children's Preventorium of Ramsey County	TB	CyCo	80	62	..	..	23
Samaritan Hospital	Gen	NPAasn	26	10	6	176	419
Sauk Centre, 3,016—Stearns							
Long Hospital	Gen	Indiv	8	1	3	27	74
Shakopee, 2,418—Scott							
Mudeura Sanitarium	Conv	Corp	80	23	..	..	1,200
.....	Gen	NPAasn	15	5	3	33	183
.....	Gen	Indiv	14	4	4	42	160

MISSISSIPPI

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Aberdeen, 4,746—Monroe							
Aberdeen Hospital	Gen	NPAasn	20	7	4	20	397
Amory, 3,727—Monroe							
Gilmore Sanitarium.....	Gen	NPAasn	35	16	8	24	657
Baldwyn, 1,279—Lee							
Baldwyn Hospital	Gen	Indiv	14	5	1	26	226
Biloxi, 17,475—Harrison							
New Biloxi Hospital.....	Gen	NPAasn	50	33	8	245	1,690
Veterans Admin. Facility.....	Gen	Vet	207	189	..	..	1,627
Booneville, 1,692—Prentiss							
North East Mississippi Hos- pital.....	Gen	NPAasn	40	19	3	40	804
Brandon, 1,184—Rankin							
Brandon Hospital	Gen	Indiv	23	16	2	85	..
.....	Gen	NPAasn	24	22	8	60	661
.....	Gen	Army	1,000	..	..	Estab.	1940
Canton, 6,011—Madison							
.....	Gen	NPAasn	30	20	7	56	1,600
.....	Gen	Part	23	14	4	56	623
.....	Gen	Indiv	20	7	2	40	546
.....	Gen	NPAasn	22	6	10	191	540

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Cleveland, 4,189—Bollivar City Hospital	Gen	City	22	11	4	65	484
Columbia, 6,064—Marion Columbia Clinic Hospital* Gen	NPAssn		35	20	4	12	1,424
Columbus, 13,645—Lowndes Columbus Hospital	Gen	NPAssn	25	8	7	92	498
Doster Hospital*	Gen	Indiv	35	14	5	36	623
Corinth, 7,818—Alcorn Corinth Hospital	Gen	Part	20	8	5	84	462
McRae Hospital	Gen	NPAssn	35	14	5	39	507
Greenville, 20,892—Washington Kings Daughters Hosp.* Gen	NPAssn		100	60	14	134	2,450
Greenwood, 14,767—Leflore Greenwood Colored Hospital Gen	Indiv		16	12	2	10	392
Greenwood-Leflore Hospital* Gen	CyCo		60	31	8	184	1,526
Grenada, 6,831—Grenada Grenada General Hospital* Gen	Part		55	23	5	86	1,541
Gulfport, 15,195—Harrison Kings Daughters Hospital* Gen	NPAssn		75	29	7	312	1,564
Veterans Admin. Facility* Ment	Vet		783	753	..	..	372
Hattiesburg, 21,026—Forrest Methodist Hospital*	Gen	Church	75	51	16	481	2,687
South Mississippi Infirmary*	Gen	Indiv	65	19	10	46	881
Houston, 1,729—Chickasaw Houston Hospital*	Gen	NPAssn	35	17	5	30	651
Indianola, 3,604—Sunflower Kings Daughters Hospital* Gen	NPAssn		23	16	3	43	712
Jackson, 62,107—Hinds Jackson Infirmary*	Gen	NPAssn	80	50	14	334	3,282
Mississippi Baptist Hosp.* Gen	Church		163	123	22	580	6,471
Mississippi State Charity Hospital*	Gen	State	100	78	6	68	4,170
Weh's Sanitarium	N&M	Corp	21	11	..	..	150
Dr. Willis Walley Hospital* Gen	Indiv		70	13	6	30	397
Kosciusko, 4,291—Attala Montfort Jones Memorial Hospital	Gen	CyCo	36	16	8	51	795
Lambert, 1,016—Quitman Lambert Hospital	Gen	Indiv	10	No data supplied			
Laurel, 20,598—Jones Laurel General Hospital* Gen	Indiv		53	26	6	380	2,313
South Mississippi Charity Hospital*	Gen	State	103	56	17	230	3,342
Lexington, 2,930—Holmes Holmes County Community Hospital	Gen	County	25	9	2	53	565
Liberty, 665—Amite Marion Butler Memorial Hospital	Gen	Part	8	2	2	7	114
Lumberton, 1,485—Lamar City Hospital	Gen	Indiv	24	11	5	86	390
Macon, 2,261—Neshoba Macon Hospital	Gen	NPAssn	25	14	4	30	584
Magee, 1,221—Simpson Magee General Hospital* Gen	Corp		23	12	4	76	693
Marks, 1,818—Quitman Marks Hospital	Gen	Indiv	20	9	2	148	618
McComb, 0,898—Pike McComb City Hospital* Gen	NPAssn		27	13	4	89	994
McComb Infirmary*	Gen	NPAssn	26	16	4	78	974
Meridian, 35,481—Lauderdale Anderson Infirmary*	Gen	NPAssn	45	14	5	117	819
East Mississippi State Hosp. Ment	State		850	833	..	..	310
Hoye's Sanitarium	N&M	NPAssn	26	12	..	..	249
Lewis Hospital	Gen	Indiv	15	5	4	32	499
Matty Hersee Hospital* Gen	State		85	64	12	132	2,999
Meridian Sanitarium*	Gen	Indiv	65	30	15	170	2,010
Riley's Hospital	Gen	Indiv	45	18	6	43	1,053
Rush's Infirmary*	Gen	NPAssn	70	40	6	94	2,275
Morton, 934—Scott Scott County Hospital* Gen	Part		21	8	3	61	730
Natchez, 15,296—Adams Natchez Charity Hospital* Gen	State		85	63	14	508	1,957
Natchez Sanatorium*	Gen	NPAssn	50	20	5	139	1,024
New Albany, 3,602—Union Mayes Hospital	Gen	NPAssn	32	18	3	162	804
New Albany Hospital and Clinic	Gen	NPAssn	12	5	2	33	299
Newton, 1,800—Newton Newton Infirmary	Gen	NPAssn	25	8	3	51	599
Okolona, 2,117—Chickasaw City Hospital	Gen	Indiv	17	4	3	10	225
Oxford, 3,453—Lafayette Bramlett Hospital*	Gen	Corp	35	17	9	67	1,000
Oxford Hospital*	Gen	Indiv	30	24	5	105	1,396
Paseagoula, 5,800—Jackson Jackson County Hospital* Gen	County		33	23	10	191	1,544
Philadelphia, 3,711—Neshoba Choctaw-Mississippi Indian Hospital	Gen	IA	35	18	7	47	790
Philadelphia Hospital	Gen	NPAssn	25	16	8	57	686
Pleayune, 5,129—Pearl River Martin Sanatorium	Gen	Indiv	22	6	2	55	305
Pontotoc, 1,832—Pontotoc Pontotoc Clinic	Gen	Part	15	6	2	40	299
Poplarville, 1,664—Pearl River Poplarville Hospital	Gen	County	26	9	2	18	800
Rosedale, 2,063—Bollivar Dr. Nobles' Clinic	Gen	Indiv	25	16	1	10	585
Rosedale-Bollivar County Hospital	Gen	City	18	8	2	..	325

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Sanatorium, 200—Simpson Mississippi State Tuberculosis Sanatorium*	TB	State	425	315	..	..	422
Shelby, 1,956—Bollivar Hall Clinic and Hospital* Gen	NPAssn		35	6	6	21	213
Starkville, 4,900—Okthbeha Okthbeha Hospital	Gen	Indiv	21	9	3	36	472
State College, 300—Okthbeha James Z. George Memorial Hospital*	Inst	State	44	7	..	..	523
Tupelo, 8,212—Lee North Mississippi Community Hospital*	Gen	NPAssn	49	28	10	190	1,906
Tylertown, 1,376—Walthall Tylertown Hospital	Gen	NPAssn	16	12	2	101	871
Walthall Hospital	Gen	NPAssn	22	10	4	100	713
Union, 1,543—Newton Laird's Hospital	Gen	NPAssn	30	17	6	260	900
Vicksburg, 24,460—Warren Mississippi State Charity Hospital*	Gen	State	110	70	10	245	3,400
Vicksburg Hospital*	Gen	NPAssn	50	35	10	122	1,865
Vicksburg Infirmary*	Gen	NPAssn	50	45	4	68	1,750
Vicksburg Sanitarium*	Gen	NPAssn	87	52	9	134	2,621
Water Valley, 3,340—Yalobusha Water Valley Hospital* Gen	Part		25	10	4	28	349
Whitfield, 300—Rankin Mississippi State Hospital* Ment	State		3,628	3,348	..	..	1,960
Winona, 2,532—Montgomery Winona Infirmary*	Gen	NPAssn	30	15	4	41	637
Yazoo City, 7,238—Yazoo Kings Daughters Hospital* Gen	NPAssn		30	11	3	58	730
Yazoo Clinic and Hospital* Gen	Part		20	12	3	24	503

Related Institutions

Bay St. Louis, 4,138—Hancock Kings Daughters and Sons Hospital	Gen	NPAssn	9	2	6	90	618
Bllox, 17,473—Harrison Jefferson Davis Soldiers Home (Beauvoir Hospital)	Inst	State	40	30	..	..	23
Columbia, 6,064—Marion Applewhite Hospital	Gen	Indiv	8	12	2	72	300
Ellisville, 2,607—Jones Ellisville State School*	MeDe	State	410	400	..	..	40
Greenville, 20,892—Washington Colored Kings Daughters Hospital	Gen	Indiv	60	42	2	27	1,010
Raymond, 641—Hinds Hinds County Tuberculosis Hospital	TB	County	34	No data supplied			
University, 15—Lafayette University of Mississippi Hospital	Inst	State	15	3	..	..	495

MISSOURI

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Bethany, 2,682—Harrison Bethany Hospital and Clinic Gen	Indiv		15	10	5	43	378
Bonne Terre, 3,730—St. Francois Bonne Terre Hospital*	Gen	NPAssn	32	25	8	128	796
Boonville, 6,989—Cooper St. Joseph's Hospital*	Gen	Church	75	27	14	78	1,045
Brookfield, 6,174—Linn Brookfield Hospital	Gen	NPAssn	14	8	4	24	250
Butler, 2,958—Bates Butler Memorial Hospital* Gen	Indiv		20	11	4	108	811
California, 2,525—Moniteau Latham Sanitarium	Gen	Indiv	33	10	2	3	1,000
Cape Girardeau, 19,420—Cape Girardeau St. Francis Hospital*	Gen	Church	104	65	15	446	2,928
Southeast Missouri Hospital* Gen	NPAssn		65	43	14	214	1,635
Carthage, 10,585—Jasper McCune-Brooks Hospital*	Gen	City	38	16	6	185	1,770
Cassville, 1,214—Barry Barry County Hospital and Clinic	Gen	Indiv	10	6	4	50	331
Clayton, 13,669—St. Louis St. Louis County Hosp.*+A Gen	County		175	151	35	551	3,700
Columbia, 15,399—Boone Boone County General Hospital*	Gen	County	48	27	5	115	1,250
Ellis Fischel State Cancer Hospital*	Cancer	State	100	77	..	..	1,461
Noyes Hospital*	Unit of University Hospitals						
Parker Memorial Hospital*	Unit of University Hospitals						
State Hospital for Crippled Children*	Unit of University Hospitals						
University Hospitals*+A	Gen	State	150	81	8	99	3,419
Excelsior Springs, 4,564—Clay Excelsior Springs Sanitarium and Hospital	Gen	Corp	35	12	5	42	267
Veterans Admin. Facility* Gen	Vet		253	186	..	..	1,661
Farmington, 3,738—St. Francois State Hospital No. 4*	Ment	State	1,775	1,611	..	..	692
Fayette, 2,608—Howard Lee Hospital	Gen	Part	20	25	4	24	493

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Fulton, 8,297—Callaway							
Callaway Hospital	Gen	County	30	17	7	107	830
State Hospital No. 1†	Ment	Stote	2,728	2,514	..	..	604
Hannibal, 20,863—Marion							
Levering Hospital	Gen	City	90	56	15	258	1,995
St. Elizabeth's Hospital	Gen	Church	75	66	15	318	2,458
Independence, 16,066—Jackson							
Independence Sanitarium and Hospital	Gen	Church	68	61	21	510	2,569
Ironton, 1,083—Iron							
Arcadia Valley Hospital, St. Mary's of the Ozarks	Gen	Church	30	25	5	91	594
Jefferson Barracks, —St. Louis							
Station Hospital	Gen	Army	177	110	6	19	1,634
Veterans Admin. Facility	Gen	Vet	519	467	..	..	4,279
Jefferson City, 24,268—Cole							
Missouri State Penitentiary Hospital	Inst	State	203	105	..	..	3,600
St. Mary's Hospital	Gen	Church	125	76	15	405	3,471
Joplin, 37,144—Jasper							
Freeman Hospital	Gen	Church	85	47	12	186	1,733
St. John's Hospital	Gen	Church	100	75	10	346	2,957
Kansas City, 399,178—Jackson							
Children's Mercy Hosp.†	Chil	NPAssn	145	125	..	..	2,634
Fairmount Maternity Hosp.	Corp	Corp	50	30	24	129	152
Kansas City General Hospital	Gen	City	600	414	40	899	10,183
St. Mary's Hospital	Gen	City	225	182	24	437	3,504
Kansas City Municipal Tuberculosis Hospital	TB	City	247	183	..	..	231
Major Clinic	N&M	Indiv	35	No data supplied	..	..	..
Menorah Hospital	Gen	NPAssn	137	114	25	378	4,114
Municipal Contagious Disease Hospital	Unit of Kansas	City	General Hospital				
Neurological Hospital	N&M	NPAssn	43	27	..	..	330
Ralph Sanitarium	Drug	Indiv	20	7	..	..	98
Research Hospital	Gen	NPAssn	186	165	25	583	6,133
St. Joseph Hospital†	Gen	Church	243	204	38	1,075	7,447
St. Luke's Hospital†	Gen	Church	236	214	27	737	6,966
St. Mary's Hospital†	Gen	Church	150	147	25	708	6,203
St. Vincent Hospital	Mat	Church	42	19	35	383	362
Trinity Lutheran Hosp.†	Gen	Church	110	90	25	497	3,516
Wesley Hospital	Gen	Church	50	17	10	37	527
Wheatley-Provident Hosp.†	Gen	NPAssn	67	33	3	46	853
Willows Maternity Sanitarium	Mat	Indiv	75	30	75	132	147
Kennett, 6,835—Dunklin							
Presnell Hospital	Gen	Part	33	13	12	47	509
Kirksville, 10,089—Adair							
Grim-Smith Hospital and Clinic	Gen	Corp	38	30	6	86	1,164
Stickler Hospital	Gen	Corp	25	10	5	22	387
Kirkwood, 12,132—St. Louis							
Oakland Park Hospital	N&M	Corp	12	8	..	..	19
U. S. Marine Hospital	USPHS	Indiv	144	115	..	..	1,402
Koch, 900—St. Louis							
Robert Koch Hospital†	TB	City	688	623	..	..	530
Lamar, 2,992—Barton							
Lamar Hospital	Gen	NPAssn	9	3	3	112	226
Lebanon, 5,025—Laclede							
Louise G. Wallace Hospital	Gen	NPAssn	24	20	5	108	1,300
Little Blue, 50—Jackson							
Rural Jackson County Emergency Hospital	Gen	County	43	34	9	263	1,371
Louisiano, 4,609—Pike							
Pike County Hospital	Gen	County	50	24	11	83	972
Marceline, 3,206—Linn							
B. B. Putman Memorial Hospital	Gen	Indiv	12	5	4	27	217
Marshall, 8,502—Saline							
Georgia Brown Blosser Home for Crippled Children	Orth	NPAssn	60	37	..	..	243
John Fitzgibbon Memorial Hospital	Gen	NPAssn	32	16	5	84	757
Maryville, 5,700—Nodaway							
St. Francis Hospital†	Gen	Church	80	40	12	271	1,684
Mexico, 9,038—Audrain							
Audrain Hospital	Gen	County	50	34	10	189	1,397
Moberly, 12,920—Randolph							
McCormick Hospital	Gen	Indiv	35	16	5	45	550
Wabash Employes' Hosp.†	Indus	NPAssn	42	25	..	..	526
Woodland Hospital	Gen	Corp	35	21	5	70	778
Mt. Vernon, 1,982—Lawrence							
Missouri State Sanatorium†	TB	State	780	742	..	..	964
Neosho, 5,318—Newton							
Sale-Bowman Hospital	Gen	Part	30	16	6	154	804
Nevada, 8,181—Vernon							
Nevada Hospital	Gen	City	27	14	6	78	653
State Hospital No. 3A	Ment	State	2,033	2,000	..	..	607
Poplar Bluff, 11,163—Butler							
Brandon Hospital	Gen	Indiv	40	11	4	21	460
Lacy Lee Hospital	Gen	Indiv	40	28	11	105	1,146
Poplar Bluff Hospital	Gen	Indiv	65	45	10	148	1,825
Robertson, 300—St. Louis							
Jewish Sanatorium	TB	NPAssn	108	64	..	..	138
Rolla, 5,141—Phelps							
Missouri Trachoma Hospital	Trach	State	65	32	..	..	349
Nelle McFarland Memorial Hospital	Gen	Indiv	62	30	8	102	1,155
St. Charles, 10,803—St. Charles							
St. Joseph's Hospital	Gen	Church	55	42	12	248	1,488
St. James, 1,812—Phelps							
St. James Hospital	Gen	Indiv	19	10	7	60	195

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
St. Joseph, 75,711—Buchanan							
Missouri Methodist Hosp.†	Gen	Church	150	103	20	432	4,094
St. Joseph's Hospital†	Gen	Church	148	83	20	434	3,093
State Hospital No. 2†	Ment	State	2,932	2,794	..	..	607
St. Louis, 816,048—St. Louis City							
Alexian Brothers Hosp.†	Gen	Church	176	112	..	..	1,594
Barnard Free Skin and Cancer Hospital†	SkCancer	NPAsso	44	38	..	..	1,117
Bornes Hospital†	Gen	Church	425	321	..	..	11,721
Bethesda General Hospital	Gen	NPAssn	100	61	20	280	1,555
Christian Hospital†	Gen	NPAssn	90	58	23	423	2,073
City Isolation Hospital†	Iso	City	200	90	..	..	1,468
City Sanitarium†	Ment	City	3,500	3,423	..	..	513
De Paul Hospital†	Gen	Church	250	241	35	1,833	11,630
Evangelical Deaconess Home and Hospital†	Gen	Church	174	166	45	1,045	7,880
Fnith Hospital	Gen	NPAssn	35	15	6	71	607
Firmen Desloge Hospital†	Unit of St. Mary's Group of Hospitals	NPAssn	100	44	..	..	1,192
Frisco Employes' Hospital	Indus	NPAssn	100	44	..	..	1,192
Homers G. Phillips Hospital†	Gen	City	773	559	55	1,411	11,250
Jewish Hospital†	Gen	NPAssn	264	201	33	659	7,704
Josephine Helfkamp Memorial Hospital	Gen	Church	40	30	10	283	1,320
Lutheran Hospital†	Gen	Church	150	126	30	733	5,223
Missouri Baptist Hosp.†	Gen	Church	400	256	30	425	6,517
Missouri Pacific Hospital†	Indus	NPAssn	300	138	..	..	4,332
Mt. St. Rose Sanatorium†	Unit of St. Mary's Group of Hospitals	NPAssn	120	52	30	365	2,413
Park Lane Memorial Hosp.	Gen	NPAssn	45	39	5	86	918
Peoples Hospital†	Gen	NPAssn	45	39	5	86	918
Robert Koch Hospital	Sec Koch, Missouri	Church	30	5	25	105	118
St. Ann's Lying-In Hosp.	Mat	Church	200	154	50	1,380	5,288
St. Anthony's Hospital†	Gen	Church	306	253	56	900	6,847
St. John's Hospital†	Gen	Church	306	253	56	900	6,847
St. Louis Children's Hospital†	Chil	NPAssn	195	127	..	..	3,653
St. Louis City Hospital†	Gen	City	1,530	127	67	7,763	15,151
St. Louis Maternity Hospital†	Mat	NPAssn	98	69	98	1,903	2,365
St. Luke's Hospital†	Gen	Church	174	145	32	389	4,378
St. Mary's Group of Hospitals†	GenTb	Church	673	563	71	1,626	11,076
St. Mary's Hospital†	Unit of St. Mary's Group of Hospitals	Church	146	95	16	371	2,232
St. Mary's Infirmary†	Gen	Church	250	222	..	..	200
St. Vincent's Sanitarium	N&M	Church	250	222	..	..	200
Shriners Hospital for Crippled Children†	Orth	NPAssn	100	100	..	..	413
Sedalia, 20,428—Pettis							
John H. Bothwell Memorial Hospital	Gen	City	60	35	12	253	1,389
Sikeston, 7,944—Scott							
Sikeston General Hospital	Gen	City	18	7	4	56	211
Smithville, 72—Clay							
Smithville Community Hosp.	Gen	NPAssn	15	6	5	56	391
Springfield, 61,238—Greene							
Burge Hospital†	Gen	Church	75	63	10	376	2,767
City Hospital	Gen	City	21	9	4	127	609
Medical Center for Federal Prisoners†	MentTb	Fed	996	788	..	..	911
St. John's Hospital†	Gen	Church	100	78	20	471	2,101
Springfield Baptist Hosp.†	Gen	NPAssn	70	50	10	170	1,001
Trenton, 7,046—Grundy							
Cullers Hospital	Gen	Indiv	20	6	2	42	254
Wright Memorial Hospital	Gen	NPAssn	18	8	4	47	431
Washington, 6,756—Franklin							
St. Francis Hospital	Gen	Church	40	25	10	189	957
Webb City, 7,033—Jasper							
Jasper County Tuberculosis Hospital	TB	County	115	112	..	..	162
Webster Groves, 18,394—St. Louis							
Glenwood Sanatorium	N&M	Corp	75	45	..	..	110
West Plains, 4,026—Howell							
Christo Hogan Hospital	Gen	Indiv	15	9	1	35	253
Related Institutions							
Independence, 16,066—Jackson							
Vaile Sanitarium	N&M	Indiv	25	20	..	..	25
Kansas City, 399,178—Jackson							
Florence Crittenton Home	Mat	NPAssn	23	23	8	31	42
Florence Home for Colored Girls	Mat	NPAssn	34	24	6	55	73
Trowbridge Training School for Nervous and Backward Children	McDe	Indiv	25	14	..	..	10
Liberty, 3,598—Clay							
Missouri Odd Fellows Home Hospital	Inst	NPAssn	65	60	..	..	800
Marshall, 8,832—Saline							
Missouri State School—Epilepsy and Feeble-minded	McDe	State	1,680	1,589	..	..	154
Marthasville, 321—Warren							
Evangelical Emmaus Home for Epileptics and Feeble-minded	McDe	Church	100	105	..	..	10
Mountain Grove, 2,431—Wright							
Ryan Hospital	Geo	Indiv	10	4	3	22	100
Rolla, 5,141—Phelps							
Missouri School of Mines Hospital	Inst	State	17	2	..	..	417
St. Charles, 10,803—St. Charles							
Evangelical Emmaus Home for Epileptics and Feeble-minded	McDe	Church	120	140	..	..	20

Key to symbols and abbreviations is on page 1071

MISSOURI—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admis- sions †
St. James, 1,812—Phelps State Federal Soldiers Home	Inst	State	55	25	..	...	196
City Infirmary	Mat	Church	75	44	31	177	231
Hospital of Masonic Home. Inst	City	NPAssn	1,035	966	..	...	201
Mother of Good Counsel Home and Hospital	Cancer	Church	68	68	..	...	65
St. Louis Training School. McDe	City	City	506	468	..	...	37
Valley Park, 2,091—St. Louis	Unit of St. Louis Children's Hospital						
	Gen	Part	15	3	6	31	262
	Gen	Indiv	7	3	5	57	95

MONTANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admis- sions †
Anaconda, 11,004—Deerlodge							
St. Ann's HospitalA	Gen	Church	80	63	15	298	1,183
	Gen	Church	78	63	19	582	2,741
	Gen	Church	163	112	22	453	3,577
Bozeman, 8,655—Gallatin							
Bozeman Deaconess Hosp.O.	Gen	Church	64	47	12	270	1,846
Browning, 1,825—Glacier							
Blackfeet Hospital	Gen	IA	45	21	12	142	1,032
Butte, 37,081—Silver Bow							
Murray HospitalA	Gen	Corp	100	74	20	355	2,722
St. James HospitalA.O.	Gen	Church	147	93	33	606	3,628
Silver Bow County Hospital	Gen	County	130	114	8	42	434
Choteau, 1,181—Teton							
Choteau Hospital	Gen	Indiv	17	8	3	21	205
Conrad, 1,471—Pondera							
St. Mary's Hospital	Gen	Church	53	30	10	162	1,167
Crow Agency, 350—Big Horn							
Crow Agency Hospital	Gen	IA	39	21	7	83	1,117
Deer Lodge, 3,278—Powell							
Montana State Tuberculosis Sanitarium	TB	State	263	235	..	...	229
St. Joseph Hospital	Gen	Church	35	34	8	134	443
Dillon, 3,014—Beaverhead							
Barrett Hospital	Gen	NPAssn	22	11	6	71	522
Butte, 912—Lincoln							
Clark's Hospital	Gen	Indiv	9	4	5	42	153
Forsyth, 1,690—Rosebud							
Rosebud Community Hosp..	Gen	Church	30	9	5	50	342
Fort Benton, 1,227—Chouteau							
St. Clare Hospital	Gen	Church	40	31	6	49	1,123
Fort Harrison, 550—Lewis and Clark							
Veterans Admin. FacilityA ..	Gen	Vet	154	131	..	...	763
Fort Missoula (Missoula P.O.), 400—Missoula							
CCC District Hospital	Gen	Fed	17	...	..	Estab. 1941	
Fort Peck, 4,000—Valley							
Fort Peck Hospital	Gen	Army	23	15	..	...	823
Glasgow, 3,790—Valley							
Frances Mahon Deaconess Hos- pital	Gen	Church	60	18	12	151	1,013
Valley County Hospital	Gen	County	16	10	6	40	274
Glendive, 4,524—Dawson							
Dawson County Hospital	Gen	County	30	15	5	55	272
Northern Pacific HospitalA ..	Gen	NPAssn	60	33	10	129	1,900
Great Falls, 29,928—Cascade							
Columbus HospitalO	Gen	Church	233	169	36	502	4,231
Montana Deaconess Hosp.O	Gen	Church	180	123	30	516	3,250
Hamilton, 2,332—Ravalli							
Mareus Daly Memorial Hosp. Gen		NPAssn	40	30	7	125	1,004
Hardin, 1,886—Big Horn							
Hardin General Hospital ..	Gen	Indiv	19	12	6	82	420
Harlem, 1,166—Blaine							
Fort Belknap Indian Hos- pital and Sanitarium	Gen	IA	48	25	8	95	789
Havre, 6,427—Hill							
Kennedy Deaconess Hosp.A ..	Gen	Church	53	29	14	155	1,386
Sacred Heart HospitalA.O. ..	Gen	Church	78	58	13	215	1,937
Helena, 15,056—Lewis and Clark							
St. John HospitalA	Gen	Church	55	51	20	238	1,723
St. Peter's HospitalA	Gen	NPAssn	60	26	10	144	894
Shodair Crippled Children's Hospital	Orth	NPAssn	24	22	6	...	203
Jordan, 500—Garfield							
Lutheran Good Samaritan Hospital	Gen	Church	20	13	4	33	232
Kalispeil, 8,245—Flathead							
Kalispeil General Hosp.A ..	Gen	Church	43	23	10	218	1,179
Lame Deer, 89—Rosebud							
Tongue River Agency Hos- pital	Gen	IA	50	29	6	40	911
Lewistown, 5,874—Fergus							
St. Joseph's HospitalA.O.	Gen	Church	120	74	16	230	2,508
Libby, 1,837—Lincoln							
Libby General Hospital	Gen	Indiv	15	10	4	100	312
Livingston, 6,642—Park							
Park Hospital	Gen	Indiv	22	9	6	51	635
Miles City, 7,313—Custer							
Miles City Hospital (Holy Rosary Hospital)A.O.	Gen	Church	110	64	15	180	2,249

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admis- sions †
Missoula, 18,440—Missoula							
Northern Pacific HospitalA ..	Indus	NPAssn	76	53	..	...	1,796
St. Patrick HospitalA.O.	Gen	Church	102	90	24	454	3,273
Thornton HospitalA	Gen	Part	35	26	8	170	1,299
Plentywood, 1,574—Sheridan							
Sheridan Memorial Hospital	Gen	NPAssn	16	10	5	73	481
Poplar, 1,442—Roosevelt							
Fort Peck Indian Agency Hospital	Gen	IA	33	24	6	99	934
Roundup, 2,644—Musselshell							
Musselshell Valley Hospital. Gen		Indiv	20	10	6	70	600
St. Ignatius, 768—Linke							
Holy Family Hospital	Gen	Church	43	21	7	120	819
Sidney, 2,978—Richland							
Sidney Deaconess Hospital. Gen		Church	29	23	12	161	963
Townsend, 1,309—Broadwater							
Broadwater Hospital	Gen	Corp	30	16	6	60	401
Warm Springs, 1,900—Deerlodge							
Montana State HospitalO	Ment	State	1,940	1,933	..	...	456
Wolf Point, 1,960—Roosevelt							
Lutheran Trinity Hospital ..	Gen	NPAssn	19	11	7	62	362

Related Institutions

Billings, 23,261—Yellowstone							
Yellowstone County Hosp... Gen		County	50	23	6	104	449
Great Falls, 29,928—Cascade							
Detention Hospital	Iso	CyCo	25	6	..	...	105
Helena, 15,056—Lewis and Clark							
Florence Crittenton Home.. Mat		NPAssn	19	2	6	62	62
Lewis and Clark County Hos- pital	Gen	County	75	60	2	13	197
Lewistown, 5,874—Fergus							
Fergus County Hospital	Gen	County	18	11	4	55	254
Poison, 2,156—Lake							
Hotel Dieu Hospital	Gen	Church	25	16	5	44	364
Scobey, 1,311—Daniels							
Scobey Clinic Hospital	Gen	Indiv	15	9	4	66	197
Shelby, 2,538—Toole							
New Shelby Hospital	Gen	Indiv	20	6	5	63	351
Terry, 1,012—Prairie							
Lutheran Good Samaritan Hospital	Gen	Church	15	7	6	50	263

NEBRASKA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admis- sions †
Ainsworth, 1,833—Brown							
Ainsworth Hospital	Gen	Part	20	9	5	146	680
Alliance, 6,253—Box Butte							
St. Joseph's HospitalA.O.	Gen	Church	115	75	13	202	2,521
Auburn, 3,639—Nemaha							
Auburn Hospital	Gen	Indiv	18	6	6	58	333
Tushie General Hospital	Gen	Indiv	15	7	5	61	349
Aurora, 2,410—Hamilton							
Aurora Hospital	Gen	Indiv	16	6	6	29	208
Bassett, 981—Rock							
Bassett Hospital	Gen	Part	12	6	6	39	246
Bentrie, 10,883—Gage							
Lutheran HospitalA	Gen	Church	45	24	8	243	882
Mennonite Deaconess Home and Hospital	Gen	Church	30	25	10	169	730
Beemer, 585—Cuming							
Beemer Hospital	Gen	Indiv	10	1	2	7	77
Benkelman, 1,448—Dundy							
Morehouse Hospital	Gen	Indiv	10	...	4	Estab. 1941	
Blair, 3,259—Washington							
Blair Hospital	Gen	Indiv	11	4	3	56	282
Broken Bow, 2,968—Custer							
Broken Bow Hospital	Gen	Indiv	35	10	4	11	829
Burwell, 1,412—Garfield							
Dr. Roy S. Cram's Hospital	Gen	Indiv	10	3	5	34	135
Cambridge, 1,084—Furnas							
Republican Valley Hospital. Gen		Indiv	25	6	2	13	109
Chadron, 4,262—Dawes							
Chadron Municipal Hospital	Gen	City	25	12	7	63	604
Columbus, 7,632—Platte							
Lutheran Good Samaritan Hospital	Gen	Church	30	15	5	74	394
St. Mary's HospitalA	Gen	Church	135	30	10	71	1,024
Dalton, 358—Cheyenne							
Pioneer Memorial Hospital ..	Gen	Indiv	10	2	4	56	230
David City, 2,272—Butler							
David City Hospital	Gen	NPAssn	13	4	4	39	206
Fairbury, 6,304—Jefferson							
Fairbury Hospital	Gen	Indiv	15	9	4	71	375
Falls City, 6,146—Richardson							
Our Lady of Perpetual Help Hospital	Gen	Church	55	12	5	55	490
Farnam, 246—Dawson							
Reeves Memorial Hospital ..	Gen	Indiv	10	2	3	24	187
Fort Crook, 75—Sarpy							
Stanton HospitalA	Gen	Army	50	32	..	...	603
Friend, 1,169—Saline							
Warren Memorial Hospital. Gen		City	12	4	4	65	173
Genoa, 1,231—Nance							
Emergency Hospital	Gen	Part	6	3	3	29	105
Genoa Hospital	Gen	Indiv	10	3	3	31	112

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Grand Island, 19,130—Hall							
Grand Island Lutheran Hospital	Gen	Church	33	20	8	137	794
St. Francis Hospital	Gen	Church	140	76	16	202	1,813
Hastings, 15,145—Adams							
Mary Lanning Memorial Hospital	Gen	NPAasn	90	55	15	270	2,161
Hebron, 1,909—Thayer							
Blue Valley Hospital	Gen	Indiv	20	7	5	...	350
Holdrege, 3,360—Phelps							
Holdrege Hospital	Gen	Part	16	10	5	45	391
Humboldt, 1,386—Richardson							
Humboldt Hospital	Gen	Indiv	12	7	3	41	286
Imperial, 1,195—Chase							
Imperial Community Hosp.	Gen	NPAasn	13	9	4	136	583
Ingleside, 1,699—Adams							
Hastings State Hospital	Gen	State	1,761	1,761	...	...	315
Kearney, 9,643—Buffalo							
Good Samaritan Hospital	Gen	Church	55	30	12	209	1,289
Hospital for the Tuberculous TB	Gen	State	200	151	...	...	163
Kimball, 1,725—Kimball							
Flett Hospital	Gen	Indiv	9	6	4	65	329
Kimball Hospital	Gen	Part	10	5	4	23	245
Lexington, 3,388—Dawson							
Lexington Community Hosp.	Gen	Corp	20	9	6	153	453
Lincoln, 81,984—Lancaster							
Bryan Memorial Hospital	Gen	Church	100	65	20	317	1,936
Green Gables, Dr. Benj. F. Bailey							
Sanatorium	Gen	Corp	120	92	6	14	547
Lincoln General Hospital	Gen	City	204	113	26	412	3,526
Lincoln State Hospital	Gen	State	1,440	1,364	...	...	299
Nebraska Orthopedic Hospital	Gen	State	110	91	...	...	835
St. Elizabeth Hospital	Gen	Church	175	110	25	564	3,965
Veterans Admin. Facility	Gen	Vet	251	226	...	...	2,202
Loup City, 1,675—Sherman							
Loup City Hospital	Gen	Indiv	11	7	4	63	338
Lynch, 487—Boyd							
Sacred Heart Hospital	Gen	Church	13	7	4	42	285
McCook, 6,212—Redwillow							
St. Catherine of Sienna Hospital	Gen	Church	60	28	12	165	1,210
Minden, 1,848—Kearney							
Seeley Hospital	Gen	Indiv	12	4	10	61	202
Nebraska City, 7,339—Otoe							
St. Mary's Hospital	Gen	Church	53	38	12	251	1,363
Norfolk, 10,490—Madison							
Lutheran Hospital	Gen	Church	60	30	15	194	1,450
Norfolk State Hospital	Gen	State	1,132	1,115	...	...	199
Our Lady of Lourdes Hosp.	Gen	Church	32	22	8	123	669
Verges Sanitarium	Gen	Indiv	30	14	5	27	215
North Platte, 12,420—Lincoln							
St. Mary Hospital	Gen	Church	66	47	10	167	1,653
Oakland, 1,880—Burt							
Oakland Community Hosp.	Gen	Indiv	12	5	3	56	270
Odell, 404—Gage							
Odell General Hospital	Gen	Indiv	10	7	5	50	250
Omaha, 223,844—Douglas							
Bishop Clarkson Memorial Hospital	Gen	Church	138	107	12	302	3,823
Creighton Memorial St. Joseph's Hospital	Gen	Church	405	264	60	1,154	9,358
Douglas County Hospital	Gen	County	80	241	15	75	2,807
Douglas County Psychiatric Hospital	Gen	County	32	75	...	...	78
Douglas County Psychiatric Hospital	Gen	County	32	75	...	...	78
Immanuel Deaconess Institute	Gen	Church	123	99	32	663	3,602
Lutheran Hospital	Gen	Church	110	60	17	293	2,100
Nebraska Methodist Hospital and Deaconess Home	Gen	Church	175	111	25	488	4,858
Nicholas Senn Hospital	Gen	NPAasn	90	64	15	206	2,190
St. Catherine's Hospital	Gen	Church	165	89	45	643	3,853
University of Nebraska Hospital	Gen	State	210	176	20	470	3,264
Ord, 2,240—Valley							
Ord Hospital	Gen	Indiv	15	9	4	23	246
Oxford, 1,141—Furnas							
Oxford General Hospital	Gen	Corp	15	8	5	60	312
Pawnee City, 1,647—Pawnee							
Pawnee Hospital and Maternity Annex	Gen	Indiv	26	13	4	102	628
Pender, 1,135—Thurston							
Logan Valley Hospital	Gen	Indiv	12	5	5	52	276
Scottsbluff, 12,057—Scotts Bluff							
Fairacres Hospital	Gen	Indiv	30	25	8	223	1,233
West Nebraska Methodist Episcopal Hospital	Gen	Church	50	35	12	260	1,631
Seward, 2,826—Seward							
Seward Hospital	Gen	Indiv	15	6	6	52	236
Sidney, 3,388—Cheyenne							
Roche Hospital	Gen	Indiv	18	7	5	51	362
Taylor Hospital	Gen	Part	18	8	5	99	441
Stratton, 630—Hitchcock							
Stewart Hospital	Gen	Indiv	11	3	3	36	159
Stromsburg, 1,127—Polk							
Stromsburg Hospital	Gen	Indiv	8	3	2	39	159
Stuart, 760—Holt							
Wilson Hospital	Gen	Indiv	20	10	3	57	364
Wahoo, 2,648—Saunders							
Waboo Community Hospital	Gen	Corp	25	7	5	48	237
Waboo Community Hospital	Gen	Indiv	15	7	5	65	429
Waboo Community Hospital	Gen	Indiv	20	11	10	85	549

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Wakefield, 961—Dixon							
Coe Hospital	Gen	Indiv	10	3	5	33	112
Winnebago, 800—Thurston							
Winnebago Indian Hospital	Gen	IA	63	37	9	73	1,183
York, 5,383—York							
Lutheran Hospital	Gen	Church	50	20	10	157	952
Related Institutions							
Beatrice, 10,883—Gage							
Nebraska Institution for Feeble-minded	MeDe	State	1,605	1,455	...	...	238
Lincoln, 81,984—Lancaster							
Nebraska State Penitentiary Hospital	Inst	State	21	6	...	...	658
Milford, 769—Seward							
Nebraska Industrial Home	Inst	State	9	5	12	59	64
Omaha, 223,844—Douglas							
City Emergency Hospital	Iso	City	40	3	...	...	77
Salvation Army Booth Memorial Hospital	Mat	Church	71	32	18	85	102
Orchard, 493—Antelope							
Orchard Hospital	Gen	Indiv	10	1	3	12	90
Plainview, 1,411—Pierce							
Plainview General Hospital	Gen	NPAasn	8	2	1	33	213
Sutherland, 862—Lincoln							
Sutherland Hospital	Gen	NPAasn	8	3	5	29	150
Sutton, 1,463—Clay							
Sutton Hospital	Gen	Indiv	12	4	2	22	123
Tecumseh, 2,104—Johnson							
Tecumseh Hospital	Gen	Indiv	12	3	3	34	150
Westport, 2,510—Cumming							
Dr. Picotte Memorial Hosp.	Gen	Indiv	12	5	4	3	69
Westport, 2,510—Cumming							
St. Joseph Home and Hosp.	InstGen	Church	18	10	6	71	459

NEVADA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Callente, 1,400—Lincoln							
Lincoln County Hospital	Gen	County	15	6	4	63	276
East Ely, 600—White Pine							
Steptoe Valley Hospital	Gen	NPAasn	40	19	7	112	304
Elko, 4,004—Elko							
Elko General Hospital	Gen	County	50	27	10	129	811
Ely, 4,140—White Pine							
White Pine General Hospital	Gen	County	50	35	15	60	815
Fallon, 1,911—Churchill							
Handley Hospital	Gen	Part	24	17	6	44	726
Las Vegas, 8,422—Clark							
Las Vegas Hospital	Gen	Corp	36	24	11	136	1,357
Reno, 21,317—Washoe							
Nevada State Hospital for Mental Diseases	Gen	State	350	300	...	...	93
St. Mary's Hospital	Gen	Church	75	68	15	369	1,970
Veterans Admin. Facility	Gen	Vet	26	17	...	...	226
Washoe County General Hospital	Gen	County	200	170	24	345	3,153
Sehurs, 75—Mineral							
Walker River Indian Hosp.	Gen	IA	24	24	3	42	336
Stewart, 412—Ormsby							
Carson Agency Hospital	Gen	IA	32	31	5	31	267
Tonopah, 2,115—Nye							
Tonopah Mines Hospital	Gen	NPAasn	20	10	3	34	310
Winnemucca, 2,485—Humboldt							
Humboldt County General Hospital	Gen	County	50	26	9	102	950
Related Institutions							
Hawthorne, 750—Mineral							
Mineral County Hospital	Gen	County	16	10	2	61	208
Owyhee, 25—Elko							
Western Shoshone Hospital	Gen	IA	23	19	4	27	519
Stewart, 412—Ormsby							
Carson Indian School Hosp.	Inst	IA	34	9	...	...	205
Yerington, 964—Lyon							
Lyon County Hospital	Gen	County	10	6	2	...	50

NEW HAMPSHIRE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Berlin, 19,084—Coos							
St. Louis Hospital	Gen	Church	92	72	16	271	2,073
Claremont, 12,144—Sullivan							
Claremont General Hosp.	Gen	NPAasn	59	41	11	224	1,119
New Hampshire Memorial Hospital	Gen	NPAasn	51	50	14	226	1,123
New Hampshire State Hospital	Gen	State	2,262	2,263	...	...	644
Dover, 11,920—Stratford							
Wentworth Hospital	Gen	City	69	54	15	223	1,503

NEW HAMPSHIRE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
.....	Gen	NPAasn	23	10	6	70	339
.....	▲ Gen	County	48	31	10	122	743
.....	Gen	NPAasn	65	40	19	259	1,324
.....	..... Gen	NPAasn	48	25	16	165	982
New Hampshire State Sanatorium	TB	State	140	140	..	..	57
Grasmere, 200—Hillsboro Hillsborough County General Hospital	Gen	County	118	100	14	230	2,022
Hanover, 3,423—Grafton Mary Hitchcock Memorial Hospital*+▲	Gen	NPAasn	178	144	18	317	5,261
Keene, 13,832—Cheshire Elliot Community Hosp.▲ ..	Gen	NPAasn	85	62	15	335	2,435
Laconia, 13,484—Belknap Laconia Hospital▲ ..	Gen	NPAasn	80	79	25	377	2,469
Lancaster, 3,095—Coos Lancaster Hospital ..	Gen	NPAasn	20	13	4	82	422
Lebanon, 7,690—Grafton Alice Peck Day Memorial Hospital	Gen	NPAasn	16	8	8	117	268
Littleton, 4,571—Grafton Littleton Hospital	Gen	NPAasn	50	21	8	128	605
Manchester, 77,685—Hillsboro Balch Hospital	Unit of Eliot Hospital		122	75	32	564	2,357
.....	Gen	NPAasn	25	5	6	15	122
Lucy Hastings Hospital ..	Gen	NPAasn	93	78	15	284	2,240
Notre Dame de Lourdes Hospital▲ ..	Gen	Church	124	106	10	338	3,736
Our Lady of Perpetual Help Maternity Hospital.	Unit of Sacred Heart Hospital		124	106	10	338	3,736
Sacred Heart Hospital▲ ..	Gen	Church	124	106	10	338	3,736
Nashua, 32,927—Hillsboro Nashua Memorial Hospital▲ ..	Gen	NPAasn	84	63	16	280	1,879
St. Joseph's Hospital▲ ..	Gen	Church	92	62	18	334	2,090
New London, 1,039—Merrimaek New London Hospital	Gen	NPAasn	20	9	6	46	354
Newport, 5,404—Sullivan Carrie F. Wright Hospital ..	Gen	NPAasn	27	12	9	96	313
North Conway, 900—Carroll Memorial Hospital	Gen	NPAasn	37	20	10	120	884
Pembroke (Suncook P.O.), 2,769—Merrimaek Pembroke Sanatorium	TB	Corp	100	79	..	..	90
Peterborough, 2,470—Hillsboro Peterborough Hospital	Gen	NPAasn	30	23	10	137	702
Plymouth, 2,833—Grafton Seava Spence Memorial Hospital	Gen	NPAasn	33	23	7	126	703
Portsmouth, 14,821—Rockingham Portsmouth Hospital▲ ..	Gen	NPAasn	98	83	18	446	3,074
U. S. Naval Hospital▲ ..	Gen	Navy	152	43	..	..	578
Rochester, 12,012—Strafford Fribie Memorial Hospital ..	Gen	NPAasn	28	27	8	302	1,417
West Stewartstown, 350—Coos Coos County Hospital ..	Gen	County	50	31	5	90	366
Whitefield, 1,834—Coos Morrison Hospital ..	Gen	NPAasn	56	10	8	30	220
Wolfeboro, 2,636—Carroll Huggins Hospital ..	Gen	NPAasn	36	27	6	96	919
Woodsville, 1,900—Grafton Cottage Hospital ..	Gen	NPAasn	28	16	8	115	563
Grafton County Hospital ..	Inst	Gen	32	34	4	18	347

Related Institutions

Epping, 1,618—Rockingham Rockingham County Farm Hospital	Inst	County	62	47	..	..	88
Exeter, 5,395—Rockingham Lamont Infirmary ..	Inst	NPAasn	53	10	..	..	834
Laconia, 13,484—Belknap Laconia State School ..	MeDe	State	616	614	..	..	57
Manchester, 77,685—Hillsboro Manchester Isolation Hosp. Iso	City	City	67	10	..	..	137

NEW JERSEY

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Allentown, 766—Monmouth Dr. Farmer's Private Hosp. Gen	Gen	Indiv	25	17	5	59	738
Allenwood, 150—Monmouth Allenwood Sanatorium and Monmouth County Hospital ..	TB	County	100	98	..	..	138
.....	.....	Gen	260	174	40	985	5,825
.....	.....	Orth	375	187	..	..	2,369
.....	.....	City	40	3	..	..	90
Bayonne, 79,195—Hudson Bayonne Hospital and Dispensary*+▲ ..	Gen	NPAasn	220	163	30	748	4,704
Swiney Sanatorium ..	Gen	Indiv	16	5	6	42	226

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Beach Haven, 746—Ocean Seashore Brnneb of Babies' Hospital ..	Unit of Babies' Hosp	Philadelphia, Pa.	..	..	..	..	..
Bellemead, 51—Somerset Belle Mead Sanatorium and Farm	N&M	Corp	65	45	..	..	103
Belleville, 28,167—Essex Essex County Hospital for Contagious Diseases*+▲ ..	Iso	County	510	177	..	..	3,852
.....	TB	County	30	18	..	..	25
Bernardsville, 3,405—Somerset Shannon Lodge Sanatorium	Conv	Corp	30	12	..	..	110
Bound Brook, 7,616—Somerset Bound Brook Hospital▲ ..	Gen	NPAasn	30	19	10	66	666
Bridgeton, 15,992—Cumberland Bridgeton Hospital▲ ..	Gen	NPAasn	89	63	16	330	1,882
Ivy Hall Sanitarium ..	Conv	Indiv	25	20	..	..	40
Browns Mills, 500—Burlington Deborah Sanatorium	TB	NPAasn	75	67	..	..	83
Camden, 117,536—Camden Bellevue Hospital	Gen	NPAasn	32	24	15	350	970
Cooper Hospital*+▲ ..	Gen	NPAasn	315	248	60	1,573	6,865
Marion Childs Hospital for Children ..	Unit of West Jersey Homeopathic Hosp.		..	..	..	..	..
Municipal Hospital for Contagious Diseases ..	Iso	City	100	25	..	..	493
West Jersey Homeopathic Hospital*+▲ ..	Gen	NPAasn	245	168	75	1,488	5,775
Cedar Grove, 2,000—Essex Essex County Hospital▲ ..	Ment	County	2,567	2,833	..	..	607
Dover, 10,491—Morris Dove General Hospital▲ ..	Gen	NPAasn	83	62	21	476	2,360
Dumont, 7,556—Bergen Dumont Private Hospital ..	Gen	Indiv	11	4	5	29	154
East Orange, 68,945—Essex East Orange General Hospital*+▲ ..	Gen	NPAasn	120	87	30	564	3,172
Elizabeth, 109,912—Union Alevan Brothers Hospital*+▲	Gen	Church	168	141	..	..	2,634
Elizabeth General Hospital and Dispensary*+▲ ..	Gen	NPAasn	193	165	33	1,220	5,301
St. Elizabeth Hospital*+▲ ..	Gen	Church	222	162	44	1,162	4,706
Englewood, 18,906—Bergen Englewood Hospital*+▲ ..	Gen	NPAasn	196	164	42	951	4,803
Fort Dix, 1,000—Burlington Station Hospital▲ ..	Gen	Army	450	61	..	..	1,865
Fort Hancock, —Monmouth Station Hospital ..	Gen	Army	175	13	2	..	523
Fort Monmouth, —Monmouth Station Hospital▲ ..	Gen	Army	54	18	4	21	830
Franklin, 4,009—Sussex Franklin Hospital▲ ..	Gen	NPAasn	27	17	7	115	520
Glen Gardner, 536—Hunterdon New Jersey Sanatorium for Tuberculous Diseases*+▲ ..	TB	State	494	451	..	..	347
Grenloch, 800—Camden Camden County General Hospital ..	Gen	County	160	160	..	..	1,479
Camden County Hospital for Mental Diseases ..	Ment	County	750	780	..	..	204
Camden County Tuberculosis Hospital ..	TB	County	245	198	..	..	205
Greystone Park, —Morris New Jersey State Hosp *+▲	Ment	State	5,490	5,414	..	..	1,792
Haekensack, 26,279—Bergen Haekensack Hospital*+▲ ..	Gen	NPAasn	250	238	42	1,470	8,874
Hashrouck Heights, 6,716—Bergen Hashrouck Heights Hospital Orth	NPAasn		31	24	..	..	613
Hoboken, 50,115—Hudson St. Mary Hospital*+▲ ..	Gen	Church	315	234	25	694	6,087
.....	TB	Church	60	42	..	..	95
Irvington, 55,328—Essex Irvington General Hospital▲	Gen	City	79	61	17	325	2,674
Jersey City, 301,173—Hudson Christ Hospital*+▲ ..	Gen	Church	225	182	21	1,038	5,135
Farmount Hospital ..	Gen	NPAasn	60	32	15	218	1,271
Greenville Hospital▲ ..	Gen	NPAasn	60	59	16	196	789
Hudson County Tuberculosis Hospital*+▲ ..	TB	County	500	485	..	..	613
Jersey City Hospital*+▲ ..	Gen	City	900	882	..	..	17,910
Jersey City Hospital for Communicable Diseases*+▲ ..	Unit of Jersey City Hospital		..	..	..	..	..
Margaret Hague Maternity Hospital*+▲ ..	Mat	County	315	231	30	5,798	6,817
Psychopathic Hospital ..	Unit of Jersey City Hospital		204	135	14	211	3,681
St. Francis' Hospital*+▲ ..	Gen	Church	24	22	..	..	37
Kearny (Arlington P.O.), 39,467—Hudson West Hudson Hospital▲ ..	Gen	NPAasn	63	51	17	315	2,167
Lakewood, 8,000—Ocean Paul Knibball Hospital▲ ..	Gen	NPAasn	64	38	11	145	1,214
Long Branch, 17,405—Monmouth Dr. E. C. Hazard Hospital ..	Gen	NPAasn	95	75	30	251	3,912
Monmouth Memorial Hospital*+▲ ..	Gen	NPAasn	202	157	42	854	5,696
Lyons, —Somerset Veterans Admin. Facility▲ ..	Ment	Vet	1,750	1,518	..	..	673
Marlboro, 500—Monmouth New Jersey State Hospital*+▲	Ment	State	2,788	2,496	..	..	896
Metuchen, 6,537—Middlesex Roosevelt Hospital▲ ..	TbCancer	County	221	219	..	..	259
Midland Park, 4,525—Bergen ..	N&M	NPAasn	185	185	..	..	194
.....	Gen	NPAasn	42	36	5	212	1,061

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Secaucus, 9,754—Hudson							
Hudson County Contagious Disease Hospital.....	Iso	County	176	70	..	...	1,257
Hudson County Hospital.....	Gen	County	250	231	..	...	303
Hudson County Hospital for Mental Diseases.....	Ment	County	1,839	1,721	..	...	374
Skilman, 23—Somerset							
New Jersey State Village for Epileptics	Epil	State	1,550	1,526	..	...	65
Somers Point, 1,992—Atlantic							
Shore Memorial Hospital....	Gen	NPAasn	65	26	9	114	833
Somerville, 8,720—Somerset							
Somerset Hospital*.....	Gen	NPAasn	96	76	20	653	3,107
South Amboy, 7,802—Middlesex							
South Amboy Memorial Hospital.....	Gen	NPAasn	42	32	14	224	1,403
Summit, 16,165—Union							
Fair Oaks Sanatorium.....	Nerv	Corp	38	23	..	...	136
Overlook Hospital*.....	Gen	NPAasn	122	103	26	575	3,271
Sussex, 1,478—Sussex							
Alexander Linn Hospital....	Gen	NPAasn	22	15	5	150	496
Teaneck, 3,280—Bergen							
Holy Name Hospital*.....	Gen	Church	182	151	43	1,305	4,733
Trenton, 124,697—Mercer							
P. W. Donnelly Memorial Hospitals	TB	City	100	64	..	...	194
	Iso	City	50	9	..	...	161
Glenwood Sanitarium	N&M	Indiv	24	18	..	...	61
Mercer Hospital*.....	Gen	NPAasn	231	159	41	1,017	3,041
New Jersey State Hosp.*.....	Ment	State	3,000	2,942	..	...	927
New Jersey State Prison Hospital.....							
	Inst	State	42	29	..	...	607
Orthopaedic Hospital and Dispensary	Orth	NPAasn	45	28	..	...	187
St. Francis Hospital*.....	Gen	Church	289	241	39	1,246	6,559
Trenton General Hospital.....	Gen	NPAasn	50	8	8	98	725
William McKinley Memorial Hospital*.....	Gen	NPAasn	124	110	33	336	2,065
Union City, 56,178—Hudson							
Union City General Hospital	Gen	NPAasn	30	15	10	63	630
Verona, 8,957—Essex							
Essex Mountain Sanatorium*.....	TB	County	446	411	..	...	476
Vineland, 7,914—Cumberland							
Newcomb Hospital.....	Gen	NPAasn	87	51	15	360	1,731
Weehawken (Union City P.O.), 14,363—Hudson							
North Hudson Hospital*.....	Gen	NPAasn	173	103	18	421	3,521
Westfield, 18,458—Union							
Children's Country Home.....	Orth	NPAasn	75	54	..	...	183
Woodbury, 8,306—Gloucester							
Underwood Hospital.....	Gen	NPAasn	50	42	20	332	1,730
Related Institutions							
Atlantic City, 64,094—Atlantic							
Dr. Leonard's Private Sanitarium	Drug	Indiv	25	...	..	...	13
Bridgeton, 15,992—Cumberland							
Cumberland County Hospital for Insane	Ment	County	300	259	..	...	74
Browns Mills, 500—Burlington							
Browns Mills Nursing Cottage	TB	Corp	50	42	..	...	15
Manor Nursing Cottage.....	TB	Indiv	40	33	..	...	25
Syeamore Hall Sanatorium.....	TB	Indiv	34	22	..	...	30
Caldwell, 4,332—Essex							
Theresa Grotta Home for Convalescents	CardConv	NPAasn	40	31	..	...	321
Farmingdale, 600—Monmouth							
Tuberculosis Preventorium for Children	TB	NPAasn	256	203	..	...	569
.....							
.....	Inst	State	35	12	..	...	750
.....							
.....	Mat	Church	8	...	..	...	72
.....							
.....	Orth	NPAasn	100	53	..	...	67
Maplewood, —Essex							
Newark City Almshouse.....	Inst	City	100	95	..	...	352
Meolo Park, 400—Middlesex							
New Jersey Home for Disabled Soldiers	Iost	State	100	68	..	...	83
Newark, 429,760—Essex							
Florence Crittenton Home.....	Mat	NPAasn	27	25	25	59	54
Newark Convalescent Hosp. Conv	City	City	155	139	..	...	76
New Brunswick, 33,180—Middlesex							
Mary Kingsland Macy Willets Infirmary	Inst	State	22	1	..	...	169
Rutgers Infirmary	Inst	NPAasn	12	5	..	...	234
Newfoundland, 563—Morris	TB	Corp	50	20	..	...	31
Niagara Falls, 1,000—Niagara							
.....							
.....	Ment	County	301	242	..	...	49
State Colony for Feeble-minded Males	MeDe	State	600	773	..	...	129
Paterson, 139,656—Passaic							
Paterson City Hospital.....	ChrIso	City	110	44	..	...	273
Roseland, 1,556—Essex							
Mountain View Rest.....	N&M	Corp	22	21	..	...	58
Sea Isle City, 773—Cape May							
Sea Isle Hospital and Training School	N&M	Corp	94	87	..	...	119

NEW JERSEY—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Totowa (Little Falls P.O.), 5,130—Passaic							
North Jersey Training School McDe	State		630	619	..	...	40
Trenton, 124,697—Mercer							
State Home for Girls..... Inst	State		70	49	3	17	273
Upper Montclair, —Essex							
Montclair Sanitarium..... Conv	Part		10	5	..	...	39
Vineland, 7,914—Cumberland							
Maplehurst School..... McDe	Indiv		20	...	..	...	18
New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives							
and Widows..... Inst	State		65	19	..	...	156
Training School at Vineland McDe	NPAasn		550	526	..	...	43
Vineland State School..... McDe	State		1,541	1,541	..	...	52
Westfield, 13,458—Union							
Brookside Nursing Home.... Conv	Corp		23	26	..	...	35
Woodbine, 2,111—Cape May							
Woodbine Colony for Feeble-minded Males..... McDe	State		730	654	..	...	47

NEW MEXICO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Albuquerque, 35,449—Bernalillo							
Ahepa National Sanatorium TB	NPAasn		46	39	..	...	23
Albuquerque Indian Sanatorium	TB	IA	100	83	..	...	136
Atchison, Topeka and Santa Fe Hospital..... Indus	NPAaso		67	31	..	...	399
Children's Home and Hosp... Orth	NPAasn		40	20	..	...	400
Methodist Sanatorium..... TB	Church		65	47	..	...	87
St. Joseph Sanatorium and Hospital	Church	Church	110	78	20	484	3,023
Southwestern Presbyterian Sanatorium	TB	Church	50	24	..	...	38
U. S. Indian School Hosp. A. Gen	Church	Church	88	54	..	...	121
Veterans Adm. Facility A. Geo	Church	Church	59	46	12	425	2,166
Veterans Adm. Facility A. Geo	IA	IA	60	52	8	99	1,839
Veterans Adm. Facility A. Geo	Vet	Vet	154	120	..	...	1,165
Veterans Adm. Facility A. Geo	Vet	Vet	105	71	..	...	197
Artesia, 4,071—Eddy							
Artesia Memorial Hospital... Gen	Indiv		25	5	6	78	418
Black Rock (Zuni P.O.), —McKinley							
Zuni Indian Hospital..... Gen	IA		43	22	8	14	490
Carlsbad, 7,116—Eddy							
Physicians and Surgeons Hospital	Gen	Indiv	16	12	4	50	499
St. Joseph Hospital..... Gen	Church	Church	40	21	12	195	1,374
Clovis, 10,065—Curry							
Atchison, Topeka and Santa Fe Hospital..... Indus	NPAasn		32	15	..	...	431
Clovis Memorial Hospital... Gen	City		42	30	10	460	1,906
Crownpoint, 50—McKinley							
Eastern Navajo Hospital... Gen	IA		58	55	11	90	1,387
Dawson, 2,000—Colfax							
Phelps Dodge Corporation Hospital..... Gen	NPAasn		30	4	4	25	254
Deming, 3,608—Luna							
Deming Ladies' Hospital... Gen	NPAasn		25	...	5	30	410
Dulce, 44—Rio Arriba							
Jicarilla Hospital and Sanatorium	GenTb	IA	88	40	4	23	389
Unit of Jicarilla Hospital and Sanatorium							
Embudo Presbyterian Hosp. Gen	Church		24	12	12	123	667
Farlington, 2,161—San Juan							
Farlington Hospital..... Gen	Indiv		6	3	3	28	158
San Juan Episcopal Indian Mission Hospital..... Gen	Church		16	9	1	15	296
San Juan Hospital..... Gen	NPAasn		25	6	5	38	312
Fort Bayard, 1,900—Grant							
Veterans Adm. Facility A. Gen	Vet	Vet	150	121	..	...	615
Veterans Adm. Facility A. Gen	Vet	Vet	155	95	..	...	189
Fort Stanton, 490—Lincoln							
U. S. Marine Hospital..... TB	USPHS		237	177	..	...	253
Fort Wingate, 14—McKinley							
Charles H. Burke Hospital... Gen	IA		35	24	4	41	872
Gallup, 7,041—McKinley							
St. Mary's Hospital..... Gen	Church		90	42	12	187	1,698
Hobbs, 10,619—Lea							
Hobbs General Hospital... Geo	Indiv		23	10	4	151	935
Hot Springs, 2,940—Sierra							
Carrie Tingley Hospital for Crippled Children..... Orth	State		125	70	..	...	265
Las Vegas, 5,941—San Miguel							
Las Vegas Hospital (Carpenter Memorial)..... Gen	NPAasn		25	18	5	87	832
New Mexico State Hospital... Ment	State		910	915	..	...	240
St. Anthony's Hospital..... GenOr	Church		65	34	10	160	1,104
Lovington, 1,010—Lea							
Lovington General Hospital Geo	Indiv		10	3	5	64	178
Mescalero, 300—Otero							
Mescalero Apache Indian Hospital..... Gen	IA		35	13	4	32	499
Raton, 7,607—Colfax							
New Mexico Miners' Hosp. A. Gen	State		88	13	10	82	722

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Rehoboth, 150—McKinley							
Rehoboth Mission Hospital... Gen	Church		35	25	10	107	714
Roswell, 13,482—Chaves							
St. Mary's Hospital..... Gen	Church		48	33	10	233	1,309
Santa Fe, 20,325—Santa Fe							
St. Vincent Sanatorium and Hospital	GenTb	Church	69	53	12	175	1,375
U. S. Indian Hospital (Chas. F. Lummls Hospital)..... Gen	IA		76	39	6	35	1,049
Santa Rita, 1,500—Grant							
Santa Rita Hospital..... Gen	NPAasn		45	22	10	203	945
Sblprock, 125—San Juan							
Northern Navajo Hospital... Gen	IA		48	44	6	35	1,176
Silver City, 5,044—Grant							
Swift Memorial Hospital... Gen	NPAasn		40	17	12	161	1,142
Socorro, 3,712—Socorro							
State Tuberculosis Sanatorium	TB	State	86	84	..	...	146
Taos, 965—Taos							
Holy Cross Hospital..... Gen	Church		17	2	3	36	425
Tuameari, 6,194—Quay							
Tuameari General Hospital Gen	City		21	11	4	84	609
Valmora, 125—Mora							
Valmora Sanatorium..... TB	NPAaso		75	38	..	...	126

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Eunice, 1,227—Lea							
Barzune Hospital..... Gen	Indiv		8	3	3	...	162
Lordsburg, 3,101—Hidalgo							
Lordsburg Hospital..... Gen	Corp		20	5	3	19	232
Los Lunas, 686—Valencia							
New Mexico Home and Training School for Mental Defectives..... McDe	State		80	76	..	...	6
Springer, 1,314—Colfax							
Springer Hospital..... Gen	Indiv		8	5	3	53	240
Taos, 965—Taos							
Thomas P. Martin Hospital Gen	IA		17	11	3	2	376
Tohatchi, 2,000—McKinley							
Tohatchi General Hospital... Gen	IA		25	15	6	11	530

NEW YORK

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Albany, 130,577—Albany							
Albany Hospital**A	Gen	NPAasn	477	406	56	1,072	11,911
Anthony N. Brady Maternity Home**A	Mat	Church	54	48	70	1,350	1,468
Child's Hospital..... Chil	Church		65	48	..	...	500
Memorial Hospital**A	Gen	NPAasn	129	104	16	385	3,039
St. Peter's Hospital**A	Gen	Church	157	130	..	...	3,759
Albion, 4,600—Orleans							
Arnold Gregory Memorial Hospital..... Gen	NPAasn		24	17	11	126	705
Amityville, 6,058—Suffolk							
Long Island Home..... N&M	Corp		207	166	..	...	323
Louden-Klickerbocker Hall... N&M	Corp		175	154	..	...	205
Amsterdam, 33,329—Montgomery							
Amsterdam City Hospital... Gen	NPAasn		88	57	15	222	1,761
Montgomery Sanatorium... TB	County		60	42	..	...	87
St. Mary's Hospital..... Gen	Church		100	78	22	403	2,137
Auburn, 35,753—Cayuga							
Auburn City Hospital**A	Gen	NPAasn	180	142	25	712	5,232
Home for Convalescent and Crippled Children..... Unit of Auburn City Hospital	Gen	Church	80	38	14	173	1,429
Mercy Hospital..... Gen							
Ballston Spa, 4,443—Saratoga							
Benedict Memorial Hospital Gen	NPAasn		16	9	6	99	291
Batavia, 17,267—Genesee							
Batavia Hospital..... Gen	NPAasn		66	40	14	383	1,818
St. Jerome Hospital..... Gen	Church		73	55	18	353	2,027
Veterans Adm. Facility A. Gen	Vet		307	254	..	...	2,115
Bath, 4,006—Steuben							
Bath Memorial Hospital... Gen	NPAaso		60	46	8	209	1,679
Veterans Adm. Facility A. Gen	Vet		428	342	..	...	2,378
Bay Shore, 10,000—Suffolk							
Dr. King's Hospital..... Gen	Indiv		35	7	5	73	283
Southside Hospital..... Gen	NPAasn		90	95	24	765	3,665
Beacon, 12,572—Dutchess							
Craig House..... N&M	Corp		77	33	..	...	44
Highland Hospital..... Gen	NPAaso		45	32	14	203	909
Mattenwan State Hospital... Ment	State		1,570	1,538	..	...	149
Bedford Hills, 2,000—Westchester							
Montefiore Hospital Country Sanatorium**A	TB	NPAasn	220	229	..	...	399
Bellerose, 1,317—Nassau							
Hillside Hospital..... N&M	NPAasn		80	37	..	...	133
Binghamton, 78,399—Broome							
Binghamton City Hosp.**A	City		510	237	40	1,065	9,584
Binghamton State Hosp.**A	State		2,074	2,659	..	...	627
Our Lady of Lourdes Memorial Hospital..... Gen	Church		88	60	22	331	1,513
Brentwood, 495—Suffolk							
Pilgrim State Hospital**A	Ment	State	9,530	9,115	..	...	1,913
Ross Sanitarium..... Gen	Indiv		40	19	3	15	126
Brewster, 1,863—Putnam							
Mountalbrock Farm Sanatorium..... N&M	Indiv		20	18	..	...	49

NEW YORK—Continued

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Brockport, 3,590—Monroe							
Brockport Central Hospital. Gen	NPAasn		19	14	6	70	480
Bronxville, 6,888—Westchester							
Lawrence Hospital. Gen	NPAasn		86	71	20	333	2,096
Brooklyn, 2,698,355—Kings							
Adelphi Hospital. Gen	NPAasn		155	...	Reorganized		
Bay Ridge Hospital. Gen	Corp		83	51	30	635	2,364
Bensonhurst Maternity Hospital. Mat	Corp		24	16	24	545	586
Bethany Deaconess Hospital. Gen	Church		82	53	20	449	1,769
Beth-El Hospital. Gen	NPAasn		205	179	65	2,247	6,414
Beth Moses Hospital. Gen	NPAasn		195	139	30	816	4,511
Brooklyn Cancer Institute. Cancer	City		87	79	...	...	530
Brooklyn Doctors Hospital. Gen	Indiv		120	74	40	642	2,014
Brooklyn Eye and Ear Hospital. ENT	NPAasn		143	74	...	...	7,213
Brooklyn Hospital. Gen	NPAasn		366	246	44	1,003	7,443
Brooklyn State Hospital. Ment	State		3,461	3,400	...	...	2,869
Brooklyn Thoracic Hosp. TB	NPAasn		125	123	...	...	128
Brooklyn Womens Hospital. Mat	NPAasn		48	37	40	1,153	1,530
Bushwick Hospital. Gen	NPAasn		108	82	22	391	2,519
Caledonian Hospital. Gen	NPAasn		100	77	30	567	2,920
Carson C. Peck Memorial Hospital. Gen	NPAasn		98	61	33	1,004	2,513
Coney Island Hospital. Gen	City		357	257	30	815	7,267
Crown Heights Hospital. Gen	Corp		144	118	28	677	3,272
Cumberland Hospital. Gen	City		561	252	39	1,035	6,900
Evangelical Deaconess Hosp. Gen	Church		105	59	20	650	1,726
Fort Hamilton Station Hospital. Gen	Army		60	26	...	...	878
Greenpoint Hospital. Gen	City		204	225	36	1,189	6,029
Harbor Hospital. Gen	NPAasn		77	42	24	137	1,563
Hospital of the Holy Family. Gen	Church		134	105	...	...	2,261
House of St. Giles the Cripple. Orth	Church		45	32	...	...	214
Israel-Zion Hospital. Gen	NPAasn		380	326	142	4,377	10,933
Jewish Hospital. Gen	NPAasn		547	411	114	3,278	13,254
Jewish Sanitarium and Hospital for Chronle Diseases. Cbr	NPAasn		525	483	...	...	236
Kings County Hospital. Gen	City		2,080	2,708	120	3,207	16,919
Kingston Avenue Hosp. Iso	City		200	200	...	...	...
Kingston Avenue Hosp. TB	City		438	150	...	...	3,856
Kingsway Hospital. Gen	Indiv		72	70	...	...	143
Long Island College Hospital. Gen	Indiv		22	10	5	165	315
Long Island College Hospital. Gen	NPAasn		419	329	47	1,513	8,532
Lutheran Hospital. Gen	Church		88	58	25	503	2,367
Madison Park Hospital. Gen	Corp		103	92	37	1,244	3,332
Methodist Hospital. Gen	Church		307	263	86	1,510	7,741
Midwood Hospital. Gen	Corp		55	40	21	471	1,612
Norwegian Lutheran Deaconesses' Home and Hospital. Gen	Church		162	158	38	759	4,505
Prospect Heights Hospital. Gen	NPAasn		134	116	41	737	4,297
Riverdale Hospital. Gen	Corp		40	11	18	342	567
St. Catherine's Hospital. Gen	Church		255	200	68	1,423	6,136
St. Charles Hospital Orthopedic Clinic. Orth	Church		55	51	...	...	197
St. John's Hospital. Gen	Church		204	166	30	538	4,776
St. Mary's Hospital. Gen	Church		249	195	59	1,299	5,347
St. Peter's Hospital. Gen	Church		197	123	27	474	3,600
Samarian Hospital. Gen	Church		60	46	15	493	1,613
Shore Road Hospital. Gen	Corp		76	No data supplied			
Swedish Hospital. Gen	NPAasn		76	70	16	379	2,260
U. S. Naval Hospital. Gen	Navy		505	471	12	112	4,487
Unity Hospital. Gen	NPAasn		209	174	39	1,011	5,330
Victory Memorial Hospital. Gen	NPAasn		60	42	24	566	1,804
Wade Hospital. Gen	Indiv		20	9	6	40	223
Williamsburgh Maternity Hospital. Mat	Indiv		69	37	52	1,277	1,448
Wyckoff Heights Hosp. Gen	NPAasn		169	127	30	770	4,227
Buffalo, 575,901—Erie							
Buffalo Columbus Hospital. Gen	NPAasn		140	79	25	275	2,215
Buffalo Eye and Ear Infirmary and Wettlaufer Clinic. ENT	NPAasn		14	5	...	...	552
Buffalo General Hosp. Gen	NPAasn		446	410	29	765	10,490
Buffalo Hospital of the Sisters of Charity. Gen	Church		208	162	24	740	4,984
Buffalo State Hospital. Ment	State		2,439	2,355	...	...	577
Central Park Hospital. Gen	NPAasn		65	48	15	420	2,162
Children's Hospital. MatChil	NPAasn		242	175	60	1,501	5,331
Crippled Children's Guild. Unit of Children's Hospital	NPAasn		190	162	49	1,103	5,713
Deaconess Hospital. Gen	NPAasn		190	162	49	1,103	5,713
Edward J. Meyer Memorial Hospital (Buffalo City Hospital). Gen	City		819	570	38	630	9,456
Emergency Hospital of the Sisters of Charity. Gen	Church		169	140	...	...	4,471
Lafayette General Hospital. Gen	NPAasn		66	40	17	234	1,482
Mersey Hospital. Gen	Church		161	139	37	1,321	4,826
Millard Fillmore Hosp. Gen	NPAasn		261	232	66	2,253	8,745
Providence Retreat. N&M	Church		200	165	...	...	95
St. Mary's Infant Asylum and Maternity Hospital. Mat	Church		45	42	45	1,083	1,159
State Institute for the Study of Malignant Diseases. SkCa	State		103	90	...	...	2,265
U. S. Marine Hospital. Gen	USPHS		75	63	...	...	519
Callieoon, 850—Sullivan							
Callieoon Hospital. Gen	Indiv		12	7	3	86	232
Cambridge, 1,572—Washington							
Mary McEllan Hospital. Gen	NPAasn		100	79	15	109	1,132

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Canandaigua, 8,321—Ontario							
Brigham Hall Hospital. N&M	Corp		80	54	...	...	105
Frederick Ferris Thompson Hospital. Gen	Corp		123	83	18	335	2,079
Veterans Admin. Facility. Ment	Vet		1,174	1,129	...	...	157
Canastota, 4,150—Madison							
Canastota Memorial Hosp. Gen	City		21	18	6	110	...
Cassadaga, 514—Chautauqua							
Newton Memorial Hospital. TB	County		180	165	...	...	115
Castle Point, 23—Dutchess							
Veterans Admin. Facility. TB	Vet		479	442	...	...	679
Catskill, 5,429—Greene							
Memorial Hospital of Greene County. Gen	County		70	48	15	230	1,587
Centr. Gen	State		8,118	7,398	...	...	1,492
Centr. Falkner in the numupos. N&M	Corp		40	27	...	...	10
Chenango Bridge, 400—Broome							
Broome County Tuberculosis Hospital. TB	County		97	71	...	...	64
Clifton Springs, 1,418—Ontario							
Clifton Springs Sanitarium and Clinic. Gen	NPAasn		275	118	8	119	2,558
Cohoes, 21,955—Albany							
Cohoes Hospital. Gen	NPAasn		60	45	10	180	1,283
Cold Spring, 1,897—Putnam							
Julia L. Butterfield Memorial Hospital. Gen	NPAasn		25	17	5	61	490
Cooperstown, 2,509—Otsego							
Mary Inogene Bassett Hospital. Gen	NPAasn		66	71	10	151	2,009
Coplaque, 2,000—Suffolk							
Nassau Suffolk General Hospital. Gen	Part		40	30	11	225	1,033
Corinth, 8,054—Saratoga							
Corinth Hospital. Gen	NPAasn		16	10	6	60	330
Cornlng, 16,212—Steuben							
Corning Hospital. Gen	NPAasn		95	77	25	594	4,361
Cornwall, 1,978—Orange							
Cornwall Hospital. Gen	NPAasn		66	49	15	208	1,630
Cortland, 15,881—Cortland							
Cortland County Hospital. Gen	NPAasn		134	76	21	465	2,740
VerNooy Sanitarium. Gen	Indiv		13	11	6	102	421
Cuba, 1,699—Allegany							
Cuba Memorial Hospital. Gen	NPAasn		19	8	7	67	333
Dannemora, 4,830—Clinton							
Clinton Prison, General and Tuberculosis Hospital. Inst	State		159	110	...	...	1,209
Dannemora State Hospital. Ment	State		1,297	1,162	...	...	166
Dansville, 4,076—Livingston							
Dansville General Hospital. Gen	NPAasn		36	20	8	162	765
Delhi, 1,811—Delaware							
Delaware County Tuberculosis Sanitarium. TB	County		32	15	...	...	29
Delhi Hospital. Gen	NPAasn		14	0	6	62	318
Dobbs Ferry, 5,883—Westchester							
Dobbs Ferry Hospital. Gen	NPAasn		46	27	10	106	533
Dunkirk, 17,718—Chautauqua							
Brooks Memorial Hospital. Gen	NPAasn		50	48	11	351	1,617
Elizabethtown, 640—Essex							
Community Hospital. Gen	NPAasn		16	6	6	48	230
Ellenville, 4,000—Ulster							
Veterans Memorial Hospital. Gen	NPAasn		18	10	8	129	577
Elmira, 45,106—Chemung							
Arnot-Ogden Memorial Hospital. Gen	NPAasn		178	135	32	757	4,654
Chemung County Sanitarium. TB	County		43	37	...	...	37
St. Joseph's Hospital. Gen	Church		220	147	27	571	4,609
Endicott, 17,702—Broome							
Bradford Lord Memorial Hospital. Unit of Binghamton City Hospital	City		116	63	30	610	2,399
Ideal Hospital. Gen	City		116	63	30	610	2,399
Farmingdale, 3,524—Nassau							
Nassau County Sanitarium. TB	County		416	311	...	...	225
Far Rockaway, —Queens							
Hospital for Joint Diseases, Country Branch. Unit of Hospital for Joint Diseases, N.Y.C.	Gen		122	90	35	450	3,134
St. Joseph Hospital. Gen	Church		122	90	35	450	3,134
Fillmore, 518—Allegany							
Genesee Country Memorial Hospital. Gen	NPAasn		16	0	4	59	163
Fishers Island, 750—Suffolk							
Station Hospital. Gen	Army		62	41	...	...	746
Flushing, —Queens							
Flushing Hospital and Dispensary. Gen	NPAasn		225	171	94	1,678	7,553
Parsons Hospital. Gen	Corp		63	60	12	411	2,300
Fort Niagara (Youngstown P.O.), —Niagara							
Station Hospital. Gen	Army		57	12	...	...	457
Fort Slocum, —Westchester							
Station Hospital. Gen	Army		138	61	...	...	2,091
Fort Totten, —Queens							
Station Hospital. Gen	Army		75	31	...	...	812
Fort Wadsworth (Staten Island P.O.), —Richmond							
Station Hospital. Gen	Army		35	17	...	...	569
Fulton, 13,322—Oswego							
Albert Lindley Lee Memorial Hospital. Gen	City		30	22	11	277	1,173
Gabriele, 300—Franklin							
Sanatorium Gabriele. TB	Church		116	45	...	...	51
Geneva, 15,555—Ontario							
Geneva General Hospital. Gen	NPAasn		70	61	20	310	2,221

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Business	Number of Births	Admissions †
Glen Cove, 12,415—Nassau							
North Country Community Hospital	Gen	NPAssa	100	91	20	569	2,924
Glens Falls, 18,836—Warren							
Glens Falls Hospital	Gen	NPAasn	120	120	30	659	3,822
Westmount Sanatorium	Thiso	County	52	49	..	..	25
Gloversville, 23,329—Fulton							
Nathan Littauer Hospital	Gen	NPAasn	129	105	30	479	3,677
Goshea, 3,073—Orange							
Goshen Hospital	Gen	NPAasn	40	25	12	200	993
Iaterplaes	N&M	Indiv	65	37	..	..	44
Gouverneur, 4,478—St. Lawrence							
Stephen B. Van Duzee Hospital	Gen	NPAasn	19	19	10	165	589
Governors Island, New York							
Station Hospital	Gen	Army	212	158	9	94	2,805
Gowanda, 3,156—Cattaraugus							
Townsend Hospital	Gen	NPAasn	27	13	10	191	676
Granville, 3,173—Washington							
Emma Loring Stevens Hosp.	Gen	NPAasn	16	9	6	98	377
Greenport, 3,259—Suffolk							
Eastern Long Island Hosp.	Gen	NPAasn	48	22	13	209	966
Harrison, 8,500—Westchester							
St. Vincent's Retreat	N&M	Church	200	192	..	..	128
Helmuth, 100—Erie							
Gowanda State Homeopathic Hospital	Ment	State	2,732	2,435	..	..	577
Hempstead, 20,836—Nassau							
Meadowbrook Hospital	Gen	County	230	228	25	641	5,988
Herkimer, 9,617—Herkimer							
Herkimer Memorial Hospital	Gen	NPAasn	31	35	9	174	1,149
Holtsville, 260—Suffolk							
Suffolk Sanatorium	TB	County	162	160	..	..	103
Hornell, 15,649—Steuben							
Bethesda Hospital	Gen	NPAasn	44	28	10	164	1,116
St. James Mercy Hospital	Gen	Church	93	61	16	285	2,855
Hudson, 11,517—Columbia							
Hudson City Hospital	Gen	NPAasn	101	80	17	320	3,271
Huntington, 11,250—Suffolk							
Huntington Hospital	Gen	NPAasn	75	58	12	423	2,111
Ilion, 8,927—Herkimer							
Ilion Hospital	Gen	NPAasn	30	40	8	193	1,491
Irrvington, 3,272—Westchester							
Irrvington House	ChilCard	NPAasn	108	105	..	..	99
Ithaca, 19,730—Tompkins							
Cornell University Infirmary and Clinic	Inst	NPAasn	80	36	..	..	2,600
Hermann M. Biggs Memorial Hospital	TB	State	250	235	..	..	247
Tompkins County Memorial Hospital	Gen	NPAasn	128	88	25	586	3,405
Jackson Heights, Queens							
Physicians Hospital	Gen	Corp	135	110	40	1,393	4,182
Jamaica, Queens							
Jamaica Hospital	Gen	NPAasn	185	137	44	1,178	5,262
Mary Immaculate Hosp.	Gen	Church	236	209	69	1,655	6,614
Memorial Hospital	Gen	Indiv	41	40	12	499	1,807
Queens General Hospital	Gen	City	644	551	52	1,808	12,285
Triboro Hospital	TB	City	537	..	..	..	191
Van Wyck Hospital	Gen	Indiv	55	18	17	129	479
Jamestown, 42,638—Chautauque							
Jamestown General Hospital	Gen	City	119	82	22	524	3,733
Woman's Christian Association Hospital	Gen	NPAasn	117	103	29	629	3,667
Jefferson, 30—Schenectady							
Jefferson Hospital	Gen	Indiv	8	4	2	5	146
Johnson City, 18,039—Broome							
Charles S. Wilson Memorial Hospital	Gen	NPAasn	318	188	32	656	5,320
Katonah, 1,800—Westchester							
"Four Winds"	N&M	Indiv	37	33	..	..	37
Hillbourne Farms	Nerv	NPAasn	15	4	..	..	6
Pleasantwood Sanatorium	N&M	Indiv	63	46	..	..	260
Kings Park, 2,600—Suffolk							
Kings Park State Hosp.	Ment	State	6,525	4,013	..	..	1,465
Kingston, 28,589—Ulster							
Benedictine Hospital (Our Lady of Victory Sanit.)	Gen	Church	90	87	16	302	3,388
Kingston Hospital	Gen	NPAasn	118	80	15	407	2,985
Ulster County Tuberculosis Hospital	TB	County	56	54	..	..	80
Lackawanna, 24,038—Erie							
Moses Taylor Hospital	Indus	NPAasn	28	12	..	..	358
Our Lady of Victory Hospital	Gen	Church	148	128	32	938	3,532
L... .. in	TB	NPAasn	145	121	..	..	94
L... ..							
Lake Placid General Hosp.	Gen	City	19	11	6	54	357
Liberty, 3,788—Sullivan							
Maimonides Hospital	Gen	NPAasn	40	22	5	89	725
Workmen's Circle Sanatorium	TB	NPAasn	80	46	..	..	98
Little Falls, 10,163—Herkimer							
Little Falls Hospital	Gen	NPAasn	52	50	13	265	1,855
Livingston, 408—Columbia							
Potts Memorial Hospital	TB	NPAasn	54	42	..	..	24
Lockport, 24,373—Niagara							
Lockport City Hospital	Gen	City	120	121	30	602	3,508
Niagara Sanatorium	TB	County	225	181	..	..	172
Long Beach, 9,600—Nassau							
Long Beach Hospital	Gen	NPAasn	53	33	7	71	1,307
Long Island City, Queens							
Astoria Sanatorium	Gen	Indiv	28	23	22	370	629
Boulevard Hospital	Gen	Corp	78	60	30	844	2,761

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Business	Number of Births	Admissions †
River Crest Sanatorium	N&M	Corp	120	95	..	..	261
St. John's Long Island City Hospital	Gen	Church	250	184	40	1,005	5,655
Lowville, 3,578—Lewis							
Lewis County General Hosp.	Gen	StateCo	43	32	18	211	1,312
Lyons, 3,863—Wayne							
Edward J. Barber Hospital	Gen	Indiv	25	13	3	57	390
Lyons Hospital	Gen	Corp	26	12	6	117	525
Malone, 8,743—Franklin							
Alice Hyde Memorial Hosp.	Gen	NPAasn	74	51	12	211	1,835
Marey, 800—Oaidea							
Marey State Hospital	Ment	State	2,776	2,533	..	..	666
Margaretville, 812—Delaware							
Margaretville Hospital	Gen	NPAssa	14	5	5	39	240
Medina, 5,871—Orleans							
Medina Memorial Hospital	Gen	NPAasn	38	23	10	202	801
Middle Grove, 100—Saratoga							
Saratoga County Tuberculosis Hospital	TB	County	100	70	..	..	85
Middletown, 21,908—Orange							
Elizabeth A. Horton Memorial Hospital	Gen	NPAasn	97	81	22	169	2,528
Middletown Sanatorium and Hospital	Gen	Indiv	50	30	8	187	875
Middletown State Homeopathic Hospital	Ment	State	3,397	3,244	..	..	541
Mineola, 10,064—Nassau							
Nassau Hospital	Gen	NPAasn	227	158	30	917	5,335
Mineville, 600—Essex							
Mineville Hospital	Gen	NPAasn	14	12	1	2	250
Michel Field, Nassau							
Stanton Hospital	Gen	Army	50	30	6	22	1,330
Monticello, 3,737—Sullivan							
Hamilton Avenue Hospital	Gen	Indiv	20	13	4	84	432
Monticello Hospital	Gen	NPAasn	26	15	5	74	664
Montour Falls, 1,345—Schoharie							
Shepard Relief Hospital	Gen	NPAasn	28	24	6	120	768
Mt. Kisco, 5,941—Westchester							
Northern Westchester Hosp.	Gen	NPAasn	100	88	22	385	3,275
Mt. McGregor, 800—Saratoga							
Metropolitan Life Insurance Company Sanatorium	TB	NPAasn	225	105	..	..	84
Mt. Morris, 3,530—Livingston							
Mount Morris Tuberculosis Hospital	TB	State	250	225	..	..	218
Mt. Vernon, 67,362—Westchester							
Mt. Vernon Hospital	Gen	NPAasn	223	140	41	925	5,027
Newark, 9,646—Wynne							
Newark Hospital	Gen	Part	27	10	4	108	814
Newburgh, 81,883—Orange							
Estelle and Walter C. Odell Memorial Sanatorium for Tuberculosis	TB	County	50	45	..	..	33
St. Luke's Hospital	Gen	NPAasn	204	116	19	469	3,726
New Rochelle, 58,408—Westchester							
New Rochelle Hospital	Gen	NPAasn	238	122	45	845	6,569
New York City, 7,454,695—New York							
Babies Hospital	Chil	NPAasn	162	117	..	..	3,232
Beekman Hospital	Gen	NPAasn	66	68	..	..	2,133
Belleuve Hospital	Gen	City	2,775	2,583	99	1,521	69,083
Beth David Hospital	Gen	NPAasn	160	106	27	557	3,599
Beth Israel Hospital	Gen	NPAasn	324	272	79	2,344	8,513
Bronx Eye and Ear Infirmary	ENT	NPAasn	54	19	..	..	3,076
Bronx Hospital	Gen	NPAasn	329	243	80	2,598	8,669
Bronx Maternity and Woman's Hospital	GynOb	NPAasn	33	16	34	617	697
Charles B. Towns Hospital	Drug	Corp	50	13	..	..	561
Columbus Hospital	Gen	Church	260	167	40	570	4,674
Columbus Hospital Extension	See Mother Cabrial Memorial Hospital						
Community Hospital	Gen	NPAasn	75	20	12	136	900
Croton Park Sanatorium	Gen	Corp	27	10	12	394	759
Doctors Hospital	Gen	NPAasn	275	112	50	580	3,585
Downtown Hospital	Gen	NPAasn	117	40	8	..	1,501
Fitch Sanatorium	Gen	Corp	71	50	48	710	2,156
Flower and Fifth Avenue Hospitals	Gen	NPAasn	340	243	71	1,355	7,803
Fordham Hospital	Gen	City	558	483	51	1,103	12,163
Franklin Maternity Sanatorium	Mat	Indiv	10	4	10	98	104
French Hospital	Gen	NPAasn	270	202	62	1,526	7,031
Gotham Hospital	Gen	Corp	82	52	24	401	2,076
Gouverneur Hospital	Gen	City	200	163	20	317	4,176
Harlem Eye and Ear Hospital	ENT	NPAasn	50	8	..	..	1,455
Harlem Hospital	Gen	City	593	600	109	2,452	16,683
Hospital for Joint Diseases	GenOr	NPAasn	355	320	..	..	6,283
Hospital for Special Surgery	Orth	NPAasn	250	175	..	..	3,519
Hospital of the Rockefeller Institute for Medical Research	Gen	NPAasn	60	31	..	..	303
Hunts Point Hospital	Gen	Corp	90	..	..	..	No data supplied
International Medical Center	Gen	NPAasn	70	15	15	10	429
Jewish Maternity Hospital	Chil	of Beth Israel Hospital	174	132	36	1,060	4,417
Jewish Memorial Hospital	Gen	NPAasn	179	123	41	558	3,755
Jenkinson Hospital	Gen	NPAasn	139	69	15	167	2,603
Lebanon Hospital	Gen	Indiv	30	29	30	1,141	1,291
Leff-Central Maternity Hosp.	Mat	Indiv	30	23	68	1,397	10,729
Lenox Hill Hospital	Gen	NPAasn	513	353	68	..	152

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Le Roy Sanitarium.....	Gen	Corp	54	39	12	218	1,236
Lincoln Hospital*+*o.....	Gen	City	430	431	70	1,605	12,382
Lutheran Hospital.....	Gen	NPAssn	115	80	26	655	2,642
Lying-In Hospital*+*o.....	Unit	of New York Hospital					
Manhattan Eye, Ear and Throat Hospital*+*o.....	ENT	NPAssn	212	140	..	..	14,117
Manhattan General Hospital Gen	Corp	Corp	315	139	50	677	5,313
Manhattan Maternity and Dispensary.....	Unit	of New York Hospital					
Manhattan State Hospital*o Ment	State	State	3,240	2,826	..	..	1,053
Medical Arts Center Hospital*o Gen	Corp	Corp	130	75	9	289	2,888
Memorial Hospital for the Treatment of Cancer and Allied Diseases*+*o.....	Cancer	NPAssn	212	187	..	..	4,617
Metropolitan Hospital*+*o.....	Gen	City	783	685	58	914	11,054
Midtown Hospital*+*o.....	Gen	NPAssn	61	33	..	1	2,025
Misericordia Hospital*+*o.....	Gen	Church	201	126	62	1,069	3,709
Montefiore Hospital for Chronic Diseases*+*o.....	Gen	NPAssn	550	530	..	..	1,447
Morrisania City Hospital*+*o Gen	City	City	471	476	68	1,034	12,851
Mother Cabrini Memorial Hospital.....	Gen	Church	170	100	25	452	2,780
Mt. Eden Hospital.....	Gen	Indiv	40	31	30	480	1,718
Mt. Sinai Hospital*+*o.....	Gen	NPAssn	850	648	..	..	16,585
Murray Hill Hospital.....	Gen	Corp	86	42	..	..	1,889
Neurological Institute of New York*+*o.....	Neur	NPAssn	205	158	..	..	3,332
New York City Cancer Institute Hospital*+*o.....	Cancer	City	192	185	..	..	938
New York City Hospital*+*o.....	Gen	City	830	677	30	757	9,484
New York Eye and Ear Infirmary*+*o.....	ENT	NPAssn	184	113	..	..	6,161
New York Foundling Hospital*+*o.....	MatChil	Church	133	70	56	689	1,564
New York Hospital*+*o.....	Gen	NPAssn	919	730	142	2,908	16,607
New York Infirmary for Women and Children*+*o.....	Gen	NPAssn	124	85	39	942	2,657
New York Nursery and Childs Hospital.....	Unit	of New York Hospital					
New York Orthopaedic Dispensary and Hospital*+*o.....	Orth	NPAssn	301	254	..	..	1,739
New York Polytechnic Medical School and Hospital*+*o.....	Gen	NPAssn	371	248	37	955	7,841
New York Post-Graduate Medical School and Hosp.*+*o.....	Gen	NPAssn	414	316	..	..	9,213
New York Skin and Cancer Hospital.....	Unit	of New York Post-Graduate Medical School and Hospital					
New York State Psychiatric Institute and Hospital*+*o.....	Ment	State	150	143	..	..	294
Park East Hospital.....	Gen	Corp	107	85	18	453	3,125
Parkway Hospital.....	Gen	NPAssn	75	33	10	312	1,294
Park West Hospital.....	Gen	Corp	74	50	14	257	2,461
Payne Whitney Psychiatric Clinic*+*o.....	Unit	of New York Hospital					
Presbyterian Hospital and Sloane Hospital for Women*+*o.....	Gen	NPAssn	693	688	144	2,597	18,440
Psychiatric Pavilion.....	Unit	of Bellevue Hospital					
Reconstruction Hospital.....	Unit	of New York Post-Graduate Medical School and Hospital					
Riker's Island Hospital*+*o.....	GenInst	City	200	120	..	..	3,263
Riverside Hospital*+*o.....	TB	City	26	17	..	..	80
Roosevelt Hospital*+*o.....	TB	City	284	246	..	..	445
St. Ann's Maternity Hosp.....	Gen	City	43	31	..	..	242
St. Clare's Hospital*+*o.....	Gen	NPAssn	398	284	..	..	7,203
St. Elizabeth's Hospital*+*o.....	Unit	of New York Foundling Hospital					
St. John's Hospital*+*o.....	Gen	Church	320	165	75	905	6,090
St. Luke's Hospital*+*o.....	Gen	Church	135	80	27	551	2,652
St. Mary's Hospital*+*o.....	Gen	Church	354	230	47	1,054	6,573
St. Vincent's Hospital*+*o.....	Unit	of New York Foundling Hospital					
St. Vincent's Hospital*+*o.....	TB	Church	300	294	..	..	711
St. Vincent's Hospital*+*o.....	Gen	NPAssn	493	377	..	..	8,038
St. Vincent's Hospital*+*o.....	Gen	Church	421	359	44	976	8,910
St. Vincent's Hospital*+*o.....	TB	Church	270	271	..	..	309
St. Vincent's Hospital*+*o.....	TB	Church	305	297	..	..	375
Sloan Hosp. for Women*+*o.....	See	Presbyterian Hospital					
Sydenham Hospital*+*o.....	Gen	NPAssn	181	144	24	771	4,651
Union Hospital.....	Gen	NPAssn	55	42	20	394	1,470
U. S. Hospital Ship Relief*+*o.....	Gen	Navy	367	173	..	..	2,757
U. S. Marine Hospital*+*o.....	GenTh	USPHS	464	327	..	..	2,469
University Heights Sanit.....	Gen	Corp	50	40	17	393	1,612
Veterans Admin. Facility*+*o.....	Gen	Vet	1,546	1,046	..	..	5,711
Webb Sanitarium.....	TB	Corp	74	50	..	..	338
Welfare Hospital for Chronic Diseases*+*o.....	Gen	Corp	19	14	12	100	307
Westchester Square Hospital Gen	City	City	1,889	1,545	..	..	2,070
West Hill Sanitarium.....	Indiv	Indiv	77	64	32	825	2,819
Wickersham Hospital.....	N&M	Corp	70	46	..	..	271
Willard Parker Hosp.*+*o.....	Gen	Corp	76	51	9	303	2,508
William Booth Memorial Hospital*+*o.....	Gen	City	252	272	..	..	6,353
Woman's Hospital*+*o.....	TB	City	172	6	..	..	53
Woman's Hospital*+*o.....	Gen	Church	48	24	24	238	775
Woman's Hospital*+*o.....	GynOh	NPAssn	24	149	100	1,613	3,951
Niagara Falls, 78,029—Niagara Mt. St. Mary's Hospital*+*o.....	Gen	Church	170	144	35	1,025	5,558
Niagara Falls Memorial Hospital*+*o.....	Gen	NPAssn	166	153	24	779	5,097

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Northport, 3,093—Suffolk Veterans Admin. Facility*+*o Ment	Vet		2,220	2,192	..	..	341
North Tonawanda, 20,254—Niagara De Graft Memorial Hosp.....	Gen	City	51	41	18	616	2,510
Norwich, 8,694—Chenango Chenango Memorial Hosp.*+*o Gen	NPAssn	NPAssn	77	50	15	208	1,765
Nyaack, 5,206—Rockland Nyaack Hospital*+*o.....	Gen	Corp	68	05	16	442	2,752
Ogdensburg, 16,346—St. Lawrence A. Barton Hepburn Hosp.*+*o Gen	Church	Church	150	80	25	350	4,007
St. John's Hospital.....	TB	Church	45	32	..	..	41
St. Lawrence State Hosp.*+*o Ment	State	State	2,237	2,051	..	..	362
Olean, 21,506—Cattaraugus Mountain Clinic.....	Gen	Indiv	33	15	5	67	491
Olean General Hospital*+*o.....	Gen	NPAssn	79	47	23	377	1,847
Rocky Crest Sanatorium.....	TB	County	43	38	..	..	38
St. Francis Hospital*+*o.....	Gen	Church	103	41	18	313	1,388
Oneida, 10,291—Madison Main Street Hospital.....	Gen	Indiv	14	10	4	05	375
Oneida City Hospital*+*o.....	Gen	City	82	62	17	360	2,025
Oneonta, 11,731—Otsego Aurelia Osborn Fox Memorial Hospital*+*o.....	Gen	NPAssn	54	57	6	287	2,147
Homer Folks Tuberculosis Hospital*+*o.....	TB	State	250	245	..	..	301
Parshall Private Hospital.....	Gen	Indiv	28	7	6	65	232
Orangeburg, 750—Rockland Rockland State Hospital*+*o Ment	State	State	7,208	6,915	..	..	1,704
Ossining, 15,996—Westchester Ossining Hospital*+*o.....	Gen	NPAssn	66	57	10	225	1,770
Sing Sing Prison Hospital*+*o Inst	State	State	84	34	..	..	2,111
Stony Lodge Foundation.....	N&M	NPAssn	35	22	..	..	61
Oswego, 22,062—Oswego Oswego Hospital.....	Gen	NPAssn	89	54	11	..	2,201
Station Hospital.....	Gen	Army	34	28	..	..	453
Otisville, 889—Orange Municipal Sanatorium*+*o.....	TB	City	400	391	..	..	557
Owego, 5,068—Tioga Glenmary Sanitarium.....	N&M	Corp	50	8	..	..	4
Peekskill, 17,311—Westchester Peekskill Hospital.....	Gen	NPAssn	73	48	16	354	1,778
Penn Yan, 5,308—Yates Soldiers and Sailors Memorial Hospital.....	Gen	NPAssn	50	28	10	163	906
Perrysburg, 375—Cattaraugus J. N. Adam Memorial Hosp.*+*o TB	City	City	482	435	..	..	379
Philmont, 1,679—Columbia Columbia Sanatorium.....	TB	County	72	50	..	..	39
Plattsburg, 16,351—Clinton Champlain Valley Hosp.*+*o.....	Gen	NPAssn	104	91	15	326	2,750
Physicians Hospital*+*o.....	Gen	NPAssn	99	78	18	313	2,959
Station Hospital.....	Gen	Army	70	51	3	32	1,353
Pomona, 50—Rockland Summit Park Sanatorium*+*o TB	County	County	90	84	..	..	71
Port Chester, 23,073—Westchester Mary Harkness Home for Convalescent Care.....	Conv	NPAssn	50	41	..	..	553
St. Luke's Convalescent Hospital.....	See	Greenwich, Conn.					
United Hospital*+*o.....	Gen	NPAssn	166	144	26	845	4,723
Port Jefferson, 3,500—Suffolk John T. Mather Memorial Hospital*+*o.....	Gen	NPAssn	58	56	12	317	2,006
St. Charles Hospital for Crippled Children.....	Orth	Church	210	183	..	..	111
Wharton Memorial Institute.....	Unit	of St. Charles Hospital for Crippled Children					
Port Jervis, 9,749—Orange St. Francis Hospital*+*o.....	Gen	Church	55	25	10	07	774
Potsdam, 4,821—St. Lawrence Potsdam Hospital*+*o.....	Gen	NPAssn	63	67	22	324	2,259
Poughkeepsie, 40,478—Dutchess Hudson River State Hospital*+*o.....	Ment	State	4,612	4,434	..	..	947
St. Francis Hospital*+*o.....	Gen	Church	86	71	23	314	2,126
Samuel and Nettie Bowne Hospital.....	TbCard	NPAssn	50	31	..	..	112
Samuel W. Bowne Memorial Hospital.....	TB	CyCo	131	117	..	..	87
Vassar Brothers Hosp.*+*o.....	Gen	NPAssn	207	160	33	780	4,265
Queens Village—Queens Creedmoor State Hosp.*+*o.....	Ment	State	4,657	4,554	..	..	1,093
Ray Brook, 530—Essex New York State Hospital*+*o TB	State	State	379	362	..	..	431
Rhinebeck, 1,697—Dutchess Northern Dutchess Health Service Center*+*o.....	Gen	NPAssn	34	26	9	112	953
Riehland, 390—Oswego Oswego County Sanatorium TB	County	County	105	93	..	..	89
Rochester, 324,975—Monroe Genesee Hospital*+*o.....	Gen	NPAssn	222	204	24	915	6,221
Highland Hospital*+*o.....	Gen	NPAssn	203	155	69	1,125	6,002
Iola-Monroe County Tuberculosis Sanatorium*+*o.....	TB	County	370	371	..	..	2,500
Monroe County Hospital.....	Gen	County	509	470	20	107	2,611
Park Avenue Hospital*+*o.....	Gen	NPAssn	85	71	20	377	2,611
Rochester General Hosp.*+*o Gen	NPAssn	NPAssn	323	251	63	1,445	8,653
Rochester Municipal Hospital*+*o.....	Gen	City	321	219	26	595	6,212
Rochester State Hosp.*+*o.....	Ment	State	3,270	3,000	..	..	7,592
St. Mary's Hospital*+*o.....	Gen	Church	225	177	32	555	7,592
Strong Memorial Hosp.*+*o Gen	NPAssn	NPAssn	223	215	25	519	7,427
Rockaway Beach, —Queens Neponsit Beach Hospital for Children.....	TbOr	CyCo	120	106	..	..	120

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Rockaway Beach Hospital and Dispensary	Gen	NPAasn	110	75	15	326	2,963
Rockville Centre, 18,613—Nassau	Gen	Chureb	70	40	28	492	1,310
Mersey Hospital	Gen	Chureb	70	40	28	492	1,310
South Nassau Communities Hospital	Gen	NPAasn	70	82	20	1,060	3,444
Rome, 34,214—Onondaga	Gen	County	200	183	8	106	2,034
Onondaga County Hospital	Gen	County	200	183	8	106	2,034
Rome Hospital and Murphy Memorial Hospital	Gen	City	116	69	26	688	2,617
Rome Infirmary	Gen	Indiv	25	5	6	10	141
Rome State School	McDe	State	3,614	3,558	24	10	284
Sackets Harbor, 1,962—Jefferson	Gen	Army	80	14	..	..	432
Station Hospital	Gen	City	46	30	10	270	1,686
Salisbury Center, 331—Herkimer	Gen	County	90	87	..	..	68
Pine Crest Sanatorium	TB	County	90	87	..	..	68
Saranac Lake, 7,138—Franklin	Gen	NPAasn	36	27	6	100	986
General Hospital	Gen	NPAasn	26	22	..	..	32
Northwoods Sanatorium	TB	NPAasn	20	18	..	..	15
Reception Hospital	TB	NPAasn	80	77	..	..	34
Will Rogers Memorial Hosp.	TB	NPAasn	80	77	..	..	34
Saratoga Springs, 13,705—Saratoga	Gen	NPAasn	90	53	17	219	1,853
Saratoga Hospital	Gen	NPAasn	90	53	17	219	1,853
Seheneetady, 87,549—Seheneetady	Gen	NPAasn	35	26	..	..	51
Eastern New York Orthopedic Hospital-School "Sunny View"	OrChil	NPAasn	400	316	70	1,200	11,922
Ellis Hospital	Gen	NPAasn	136	112	..	..	123
Seheneetady County Tuberculosis Hospital (Glenridge Sanatorium)	TB	County	136	112	..	..	123
Seneca Falls, 6,162—Seneca	Gen	City	20	20	11	148	686
Seneca Falls Hospital	Gen	City	20	20	11	148	686
Sherburne, 1,192—Chenango	Gen	County	33	22	..	..	14
Chenango County Tuberculosis Hospital	TB	County	33	22	..	..	14
Sodus, 1,513—Wayne	Gen	Indiv	25	13	7	63	364
Myers Hospital	Gen	Indiv	25	13	7	63	364
.. Epil	State	2,364	2,353	..	..	..	293
.. Gen	NPAasn	109	45	19	269	1,508	
Stamford, 1,088—Delaware	Gen	NPAasn	18	4	6	45	239
Bathgate Hospital	Gen	NPAasn	18	4	6	45	239
Stapleton (Staten Island P.O.), Richmond	Gen	USPHS	809	571	6	31	8,329
U. S. Marine Hospital	Gen	USPHS	809	571	6	31	8,329
Staten Island Hospital	Gen	City	30	16	..	..	348
..	NPAasn	100	70	18	340	2,086	
..	Church	217	176	33	764	4,950	
Seaside Hospital	Unit of Hospital for Special Surgery, New York City	City	2,008	1,973	10	22	2,110
Sea View Hospital	TB	Corp	255	102	44	1,211	5,142
Staten Island Hospital	Gen	Corp	255	102	44	1,211	5,142
Sumner, 3,768—Rockland	Gen	Church	89	65	16	280	1,907
Good Samaritan Hospital	Gen	Church	89	65	16	280	1,907
Sunmount, 60—Franklin	Gen	Vet	518	367	..	..	597
Veterans Admin. Facility	TB	Vet	518	367	..	..	597
Syracuse, 205,967—Onondaga	Gen	City	84	30	..	..	618
City Hospital	Gen	City	84	30	..	..	618
Crouse-Irving Hospital	Gen	NPAasn	215	193	23	1,060	7,336
General Hospital	Gen	NPAasn	85	84	25	733	2,901
Hospital of the Good Shepherd	Gen	NPAasn	210	176	..	..	4,876
Onondaga General Hospital	Gen	NPAasn	70	32	6	23	797
Onondaga Sanatorium	TB	County	255	224	..	..	265
Peoples Hospital	Gen	NPAasn	28	13	8	65	466
St. Joseph Hospital	Gen	Church	205	160	35	912	6,600
St. Mary's Maternity Hospital and Infants Asylum	Mat	Church	37	16	29	410	463
Syracuse Memorial Hosp.	Gen	NPAasn	226	193	40	1,466	6,236
Syracuse Psychopathic Hospital	Gen	State	60	53	..	..	665
Twin Rime	N&M	Indiv	10	6	..	..	50
..	Gen	NPAasn	67	46	13	272	1,805
.. McDe	State	3,600	3,556	6	12	499	
Moses-Ludington Hospital	Gen	Corp	47	30	6	142	918
Troy, 70,304—Rensselaer	Gen	NPAasn	109	98	16	525	2,809
Leonard Hospital	Gen	NPAasn	60	41	..	..	322
Marshall Sanitarium	N&M	Gen	60	41	..	..	322
Price Memorial Hospital	Unit of Samaritan Hospital	Gen	179	132	21	512	4,743
St. Joseph's Maternity Hospital	Mat	Church	30	10	36	290	327
..	GenIso	NPAasn	179	132	21	512	4,743
Samaritan Hospital	Gen	Church	272	201	22	477	4,443
Troy Hospital	Gen	Church	272	201	22	477	4,443
Trudeau, 600—Essex	Gen	NPAasn	200	192	..	..	208
Trudeau Sanatorium	TB	NPAasn	200	192	..	..	208
Tupper Lake, 5,451—Franklin	Gen	Church	28	14	5	50	435
Mersey General Hospital	Gen	Church	28	14	5	50	435
Tuxedo Park, 2,500—Orange	Gen	NPAasn	33	17	7	60	558
Tuxedo Memorial Hospital	Gen	NPAasn	33	17	7	60	558
Utica, 100,518—Onondaga	Gen	NPAasn	40	27	..	..	112
Children's Hospital Home	OrthTb	NPAasn	84	75	18	361	2,840
Faxon Hospital	Gen	NPAasn	84	75	18	361	2,840
Masonic Soldiers and Sailors Memorial Hospital	Gen	NPAasn	200	..	100	..	412
Onondaga County Tuberculosis Sanatorium	TB	County	182	162	..	..	141
St. Elizabeth Hospital	Gen	Church	140	124	20	583	4,532

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
St. Luke's Home and Hospital	Gen	Church	123	78	28	434	2,861
Utica General Hospital	Gen	City	124	70	14	190	3,721
Utica Memorial Hospital	Gen	NPAasn	77	49	25	346	2,670
Utica State Hospital	Gen	State	1,786	1,770	..	..	536
..	Gen	County	535	360	15	168	4,681
..	Gen	County	275	238	..	..	268
Warsaw, 3,551—Wyoming	Gen	County	115	90	20	381	2,501
Wyoming County Community Hospital	Gen	County	115	90	20	381	2,501
Warwick, 2,534—Orange	Gen	Church	52	15	14	64	506
St. Anthony's Hospital	Gen	Church	52	15	14	64	506
Waterloo, 4,010—Seneca	Gen	NPAasn	25	15	5	109	466
Waterloo Memorial Hospital	Gen	NPAasn	25	15	5	109	466
Watertown, 33,385—Jefferson	Gen	NPAasn	125	104	18	322	2,921
House of the Good Samaritan	Gen	NPAasn	125	104	18	322	2,921
Jefferson County Sanatorium	TB	County	78	58	..	..	68
Mersey Hospital	Gen	Church	114	88	32	467	2,574
Waverly, 5,450—Tioga	Gen	NPAasn	65	50	12	192	1,483
Tioga County General Hospital	Gen	NPAasn	65	50	12	192	1,483
..	Gen	Part	17	15	3	64	398
.. and Gertrude F. Jones	Gen	City	45	35	10	273	1,783
West Haverstraw, 2,533—Rockland	Gen	City	45	35	10	273	1,783
New York State Reconstruction Home	OrChil	State	310	127	..	..	281
West Point, 4,530—Orange	Gen	Army	158	70	8	80	3,470
Statin Hospital	Gen	Army	158	70	8	80	3,470
White Plains, 40,327—Westchester	Gen	N&M	350	273	..	..	378
New York Hospital—Westchester Division	N&M	NPAasn	350	273	..	..	378
New York Orthopaedic Dispensary and Hospital, Country Branch	Unit of New York Orthopaedic Dispensary and Hospital, New York City	Gen	188	93	39	517	3,593
St. Agnes Hospital	Gen	Church	172	111	24	401	3,963
White Plains Hospital	Gen	NPAasn	172	111	24	401	3,963
Winifred Masterson Burke Relief Foundation	Conv	NPAasn	250	216	..	..	4,372
Willard, 600—Seneca	Gen	State	3,082	2,802	..	..	368
Willard State Hospital	Gen	State	3,082	2,802	..	..	368
Wingdale, 500—Dutchess	Gen	State	4,800	4,402	..	..	585
Harlem Valley State Hospital	Gen	State	4,800	4,402	..	..	585
Woodhaven, —Queens	Gen	Church	390	344	..	..	949
St. Anthony's Hospital	TB	Church	390	344	..	..	949
Wynantskill, 200—Rensselaer	Gen	County	118	100	..	..	86
Pawling Sanatorium	TB	County	118	100	..	..	86
Yaphank, 350—Suffolk	Gen	County	257	235	..	..	405
Suffolk Home and Infirmary	Gen	County	257	235	..	..	405
Yonkers, 142,598—Westchester	Gen	City	45	45	..	..	65
Gray Oaks Hospital	TB	City	45	45	..	..	65
House of Rest at Sprain Ridge	TB	NPAasn	100	82	..	..	126
St. John's Riverside Hospital	Gen	NPAasn	188	133	24	603	4,274
..	Gen	NPAasn	177	92	20	401	2,674
St. Joseph's Hospital	Gen	Church	142	91	38	650	3,345
Yonkers General Hospital	Gen	NPAasn	142	91	38	650	3,345
Yonkers Professional Hosp.	Gen	Corp	100	66	25	394	2,200
Related Institutions							
Albany, 130,577—Albany	Gen	Indiv	12	7	3	58	203
Albany's Hospital for Incurables	Incur	NPAasn	100	98	..	..	81
St. Margaret's House and Hospital	Inst	Church	55	45	..	..	75
Albion, 4,600—Orleans	Gen	State	484	329	3	9	137
Albion State Training School	McDe	State	40	25	5	27	59
Orleans Welfare Hospital	Gen	County	40	25	5	27	59
Alden, 654—Erie	Gen	County	27	8	..	..	128
Erie County Penitentiary Hospital	Inst	County	27	8	..	..	128
Amityville, 5,058—Suffolk	Gen	Corp	350	262	..	..	383
Brunswick Home	N&M	Corp	350	262	..	..	383
..	Gen	Indiv	12	7	3	58	203
Westfield State Farm	Inst	State	59	20	33	..	482
Binghamton, 76,309—Broome	Gen	State	59	20	33	..	482
Binghamton Training School for Nervous, Backward and Mental Defectives	McDe	Indiv	50	43	..	..	15
Brooklyn, 2,698,265—Kings	Gen	NPAasn	701	611	..	..	245
Brooklyn Hebrew Home and Hospital for Aged	Inst	NPAasn	701	611	..	..	245
Churchill Sanitarium	Gen	Indiv	12	6	..	..	66
Buffalo, 575,901—Erie	Gen	NPAasn	8	2	21	71	
Inglewood Home	Mat	NPAasn	8	2	21	71	
Castle, 902—Wyoming	Gen	Indiv	45	16	..	..	40
Greene Sanitarium (Castle Sanitarium)	Conv	Indiv	45	16	..	..	40
Cragmoor, 100—Ulster	Gen	Church	30	28	..	..	150
Vista Maria	Conv	Church	30	28	..	..	150
Delhi, 1,841—Delaware	Gen	County	14	10	..	..	239
Delaware Infirmary	Inst	County	14	10	..	..	239
Eastview, 1,000—Westchester	Gen	County	14	10	..	..	239
Solomon and Betty Loeb Memorial Home for Convalescents	Conv	NPAasn	108	106	..	..	1,693

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Elmira, 45,100—Chemung	Inst	State	100	21	..	...	1,080
Elmira Reformatory Hosp...	Inst	State	100	21	..	...	1,080
Far Rockaway, —Queens	Inst	State	100	21	..	...	1,080
Wave Crest Convalescent	Inst	State	100	21	..	...	1,080
Home	OrChil	NPAasn	120	60	..	...	144
Hawthorne, 2,000—Westchester	Inst	State	110	95	..	...	180
Rosary Hill Home.....	Cancer	Church	110	95	..	...	180
Industry, 350—Monroe	Inst	State	50	21	..	...	891
Hospital of State Agriculture and Industrial School.....	Inst	State	50	21	..	...	891
Iroquois, 40—Erie	Inst	State	36	15	..	...	620
Thomas Indian School Hosp. Inst	Inst	State	36	15	..	...	620
Ithaca, 19,730—Tompkins	Inst	State	36	15	..	...	620
Valley-Jones Hospital	Gen	Indiv	14	6	..	...	217
Reconstruction Home	Orth	NPAasn	100	60	..	...	93
Johnson City, 18,039—Broome	Inst	State	100	60	..	...	93
Mrs. Springer's Private Hospital	Mat	Indiv	18	7	14	97	114
Keene Valley, 511—Essex	Inst	State	11	5	2	23	94
Keene Valley Neighborhood House and Hospital.....	Gen	NPAasn	11	5	2	23	94
Kingston, 28,580—Ulster	Inst	State	35	15	..	...	42
Hackett Sanitarium and Nursing Home	Conv	Indiv	35	15	..	...	42
Lake Ronkonkoma, 1,000—Suffolk	Inst	State	18	7	..	...	7
Gary de Vabre Academy....	McDe	Part	18	7	..	...	7
Millbrook, 1,340—Dutchess	Inst	State	62	46	..	...	169
Cardinal Hayes Convalescent Home for Children.....	Conv	Church	62	46	..	...	169
Napanoch, 750—Ulster	Inst	State	28	12	..	...	166
Institution for Male Defective Delinquents	McDe	State	28	12	..	...	166
Newark, 9,640—Wayne	Inst	State	2,563	3,150	9	7	263
Newark State School.....	McDe	State	2,563	3,150	9	7	263
New York City, 7,454,935—New York	Inst	State	2,563	3,150	9	7	263
Beth Abraham Home for Incurables	Incur	NPAasn	256	256	..	...	56
Bryant Sanitarium	Mat	Indiv	10	2	10	61	70
Hebrew Convalescent Home. Conv	NPAasn	87	80	..	...	...	817
Home for Aged and Infirm	Inst	NPAasn	31	12	..	...	187
Hebrews	Inst	City	1,847	1,837	..	...	1,064
Home for Dependents.....	Inst	NPAasn	61	18	..	...	626
Home for Hebrew Infants.....	Inst	NPAasn	348	330	..	...	253
Home for Incurables.....	Cancer	Church	146	140	..	...	634
House of Calvary.....	Cancer	Church	24	13	..	...	253
St. Andrew's Convalescent Hospital	Conv	Church	60	50	..	...	498
St. Mary's Hospital for Children	Conv	Church	92	91	..	...	300
St. Rose's Free Home for Incurable Cancer	Cancer	Church	92	91	..	...	300
Niagara Falls, 78,029—Niagara	Inst	City	38	15	..	...	163
Niagara Falls Municipal Hospital	Iso	City	38	15	..	...	163
..	Inst	County	232	230	..	...	604
New York State Woman's Relief Corps Home.....	Inst	State	61	63	..	...	179
Pawling, 1,440—Dutchess	Inst	State	19	11	..	...	1
White Oak Farm.....	N&M	Corp	19	11	..	...	1
Pelham Manor, 5,302—Westchester	Inst	NPAasn	30	28	..	...	46
Pelham Home for Children. Card	NPAasn	30	28	..	...	...	46
Pleasantville, 4,454—Westchester	Inst	State	34	7	..	...	562
Hebrew Sheltering Guardian Orphan Asylum	Inst	NPAasn	34	7	..	...	562
Poughkeepsie, 40,478—Dutchess	Inst	City	52	41	..	...	371
Poughkeepsie City Home Infirmary	Inst	City	52	41	..	...	371
Vassar College Infirmary and Baldwin House	Inst	NPAasn	35	12	..	...	1,166
Queens Village, —Queens	Inst	NPAasn	35	12	..	...	1,166
Queens Village Sanatorium..	Gen	Indiv	12	3	8	64	112
Rhinebeck, 1,697—Dutchess	Inst	State	25	22	..	...	241
Holiday Farm, Home for Convalescent Children	Conv	NPAasn	25	22	..	...	241
Rochester, 324,075—Monroe	Inst	State	60	49	..	...	138
Convalescent Hospital for Children	Conv	NPAasn	25	20	..	...	63
Field Sanitarium	Conv	Indiv	35	10	..	...	45
Knorr Sanitarium	Conv	Indiv	35	10	..	...	45
Rockaway Park, —Queens	Inst	State	112	97	..	...	360
Convalescent Home for Hebrew Children	OrthConv	NPAasn	112	97	..	...	360
Roslyn, 972—Nassau	Inst	State	119	114	..	...	122
St. Francis Sanatorium for Cardiac Children	Card	Church	119	114	..	...	122
Rye, 9,865—Westchester	Inst	State	47	37	..	...	85
Halcyon Rest Sanitarium... N&M	Inst	Indiv	15	12	..	...	20
Saranac Lake, 7,138—Franklin	Inst	Indiv	30	25	..	...	45
Franklin Manor	TB	Indiv	30	25	..	...	45
Owens Private Sanatorium.. TB	Inst	Indiv	19	18	20	607	617
Schenectady, 67,540—Schenectady	Inst	County	65	45	..	...	215
Belleuve Maternity Home... Mat	Inst	County	35	13	..	...	349
Schenectady County Home and Hospital	Inst	County	35	13	..	...	349
Schenectady Isolation Hosp. Iso	Inst	City	35	13	..	...	349
Sea Cliff, 4,410—Nassau	Inst	State	70	54	..	...	530
Country Home for Convalescent Bahles	Conv	NPAasn	70	54	..	...	530
Staten Island, 174,441—Richmond	Inst	City	1,152	1,120	..	...	459
New York City Farm Colony Inst	Inst	NPAasn	191	131	..	...	451
Sailors' Snug Harbor Hosp. Gen	Inst	NPAasn	191	131	..	...	451

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
State School, —Orange	Inst	State	26	15	..	...	517
Hospital of New York State Training School for Boys. Inst	Inst	State	26	15	..	...	517
Syracuse, 205,947—Onondaga	Inst	State	1,166	1,025	..	...	117
Syracuse State School.....	McDe	State	1,166	1,025	..	...	117
Troy, 70,304—Rensselaer	Inst	County	53	38	..	...	110
Rensselaer County Welfare Home	Inst	County	53	38	..	...	110
Tupper Lake, 5,451—Franklin	Inst	County	53	38	..	...	110
American Legion Mountain Camp	Conv	NPAasn	65	43	..	...	203
Walkkill, 800—Ulster	Inst	State	70	54	..	...	106
Walkkill State Prison Hosp..	Inst	State	18	5	..	...	217
Wassaic, 350—Dutchess	Inst	State	4,378	4,825	6	15	510
Wassaic State School.....	McDe	State	4,378	4,825	6	15	510
Williamsville, 3,614—Erie	Inst	State	60	54	..	...	198
Josephine Goodyear Convalescent Home	ConvChil	NPAasn	60	54	..	...	198
Woodbourne, 500—Sullivan	Inst	State	750	749	..	...	211
Woodbourne Institution for Defective Delinquents	McDe	State	750	749	..	...	211
Yonkers, 142,598—Westchester	Inst	City	87	16	..	...	315
Yonkers City Hospital for Communicable Diseases....	Iso	City	87	16	..	...	315

NORTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Albemarle, 4,060—Stanly	Inst	State	27	16	5	117	1,167
Stanly General Hospital.....	Gen	NPAasn	27	16	5	117	1,167
Yadkin Hospital	Gen	NPAasn	40	27	7	232	1,629
Ashboro, 6,081—Randolph	Inst	State	40	27	6	171	1,439
Randolph Hospital.....	Gen	NPAasn	40	27	6	171	1,439
Asheville, 51,310—Buncombe	Inst	State	175	70	..	...	151
Appalachian Hall	N&M	Corp	116	83	16	215	2,971
Ashville Mission Hospital.....	Gen	NPAasn	45	84	11	213	1,631
Aston Park Hospital.....	Gen	NPAasn	85	46	..	...	69
Highland Hospital	N&M	NPAasn	40	30	3	61	1,216
Norburn Hospital	Gen	NPAasn	90	85	17	260	1,450
St. Joseph's Hospital.....	Gen	Church	30	21	..	...	35
Zephyr Hill Sanatorium.....	TB	Indiv	35	..	..	..	Reorganized
Wesnoea	NervConv	Corp	28	6	4	35	421
Badin, 3,063—Stanly	Inst	State	53	43	12	183	1,237
Badin Hospital	Gen	Corp	53	43	12	183	1,237
Banner Elk, 344—Avery	Inst	State	12	4	4	70	231
Grace Hospital.....	Gen	Church	12	4	4	70	231
Beaufort, 3,272—Carteret	Inst	State	55	40	12	200	1,629
Potter Emergency Hospital. Gen	Inst	State	55	40	12	200	1,629
Biltmore, —Buncombe	Inst	State	55	40	12	200	1,629
Biltmore Hospital.....	Gen	NPAasn	55	40	12	200	1,629
Black Mountain, 1,042—Buncombe	Inst	State	20	8	..	...	46
Black Mountain Sanatorium.....	NervDrug	Corp	20	8	..	...	46
Fellowship Sanatorium of the Royal League.....	TB	NPAasn	20	10	..	...	18
Western North Carolina Sanatorium.....	TB	State	205	300	..	...	256
Brevard, 3,061—Transylvania	Inst	State	23	7	2	56	423
Transylvania Community Hospital	Gen	NPAasn	23	7	2	56	423
..	Gen	NPAasn	42	28	5	133	1,193
Charlotte Memorial Hosp.	ENT	Part	20	16	..	...	1,761
Good Samaritan Hospital.....	Gen	NPAasn	253	150	25	419	5,297
Mersey Hospital.....	Gen	Church	101	68	12	259	2,073
New Charlotte Sanatorium.....	Gen	Church	132	105	20	831	4,100
Presbyterian Hospital.....	Gen	Corp	100	65	20	...	2,775
Cherokee, 500—Swain	Inst	State	173	138	32	762	5,737
Eastern Cherokee Indian Hospital	Gen	IA	28	10	7	68	603
Columbia, 1,090—Tyrrell	Inst	State	15	8	4	21	403
Columbia Hospital	Gen	Indiv	15	8	4	21	403
..	Gen	County	125	116	25	891	4,977
..	Gen	NPAasn	20	10	11	91	419
..	Gen	NPAasn	498	289	50	602	11,061
..	Gen	NPAasn	60	51	9	218	1,623
..	Gen	Indiv	30	11	..	...	1,083
..	Gen	NPAasn	200	144	25	610	5,221
..	Gen	CyCo	45	23	6	61	822
..	Gen	Church	60	37	12	176	1,623
Erwin, 3,500—Harnett	Inst	State	34	10	8	97	600
Good Hope Hospital.....	Gen	NPAasn	34	10	8	97	600
Fayetteville, 17,428—Cumberland	Inst	State	27	29	..	...	50
Cumberland County Tuberculosis Sanatorium.....	TB	County	27	29	..	...	50
Highsmith Hospital.....	Gen	NPAasn	120	107	12	159	2,135
R. L. Pittman Hospital.....	Gen	NPAasn	83	69	..	...	1,631
Veterans Admin. Facility....	Vet	NPAasn	310	190	..	...	1,631

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Fletcher, 500—Headerson Mountain Sanitarium and Hospital ^{AO}	Gen	Church	55	41	5	81	1,114
Fort Bragg, —Cumberland Station Hospital ^{AO}	Gen	Army	530	174	9	95	7,043
Franklin, 1,249—Macon Angel Hospital	Gen	Indiv	55	29	6	40	1,236
Gastonia, 21,313—Gaston City Hospital	Gen	Corp	80	32	10	48	1,260
Garrison General Hospital ..	Gen	NPA ^{asn}	50	23	10	293	1,343
Gaston County Negro Hosp. Gen	County	County	22	10	3	13	263
North Carolina Orthopedic Hospital ^{AO}	Orth	State	160	161	..	..	457
State Hospital	Gen	NPA ^{asn}	106	68	9	207	2,745
Greensboro, 59,319—Guilford Glenwood Park Sanitarium ..	N&M	Corp	25	17	..	..	375
Piedmont Memorial Hosp ^{AO} ..	Gen	NPA ^{asn}	57	48	11	279	2,403
L. Richardson Memorial Hospital ^{AO}	Gen	NPA ^{asn}	60	40	8	134	1,516
St. Leo's Hospital ^{AO}	Gen	Church	81	60	9	296	2,666
Sternberger Hospital for Women and Children ^{AO} ..	Gen	NPA ^{asn}	42	34	10	239	1,114
Wesley Long Hospital ^{AO}	Gen	Corp	65	61	10	262	2,376
Greenville, 12,674—Pitt Pitt General Hospital	Gen	NPA ^{asn}	60	32	3	113	1,852
Hamlet, 5,111—Richmond Hamlet Hospital ^{AO}	Gen	NPA ^{asn}	45	38	5	86	1,315
Henderson, 7,647—Vance Jubilee Hospital	Gen	Church	30	24	3	31	521
Maria Parham Hospital ^{AO} ..	Gen	NPA ^{asn}	41	21	0	119	1,061
Hendersonville, 5,351—Henderson Patton Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	39	15	6	104	840
Hickory, 13,457—Catawba Hickory Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	34	15	6	117	858
Richard Baker Hospital ^{AO} ..	Gen	Indiv	60	30	14	277	1,540
High Point, 38,495—Guilford Burrus Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	68	54	7	263	1,965
Guilford General Hospital ^{AO} ..	Gen	NPA ^{asn}	38	29	5	273	1,817
Huntersville, 763—Mecklenburg Mecklenburg Sanatorium ^{AO} ..	TB	County	140	140	..	..	158
Jamestown, 900—Guilford Guilford County Sanatorium ^{AO} ..	TB	County	139	139	..	..	132
Jefferson, 304—Ashe Ashe County Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	24	..	6	Estab	1941
Kinston, 15,388—Lenoir Memorial General Hospital ^{AO} ..	Gen	NPA ^{asn}	69	33	7	182	1,661
Parrott Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	40	20	5	191	1,267
Laurinburg, 5,653—Scotland Gen	Gen	NPA ^{asn}	29	13	4	67	543
Ienoir, 7,548—Caldwell Blackwelder Hospital	Gen	NPA ^{asn}	45	26	5	121	1,631
Caldwell Hospital ^{AO}	Gen	NPA ^{asn}	27	14	7	182	824
Dula Hospital ^{AO}	Gen	NPA ^{asn}	25	12	2	87	638
Lexington, 10,550—Davidson Davidson Hospital	Gen	Indiv	25	10	5	42	656
Lincolnton, 4,525—Lincoln Gordon Crowell Memorial Hospital ^{AO}	Gen	Corp	50	25	8	115	1,703
Reeves Hospital ^{AO}	Gen	NPA ^{asn}	35	19	6	120	965
Lumberton, 5,803—Robeson Baker Sanatorium ^{AO}	Gen	NPA ^{asn}	79	52	6	242	2,862
Thompson Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	75	60	10	338	3,084
Marion, 2,839—McDowell Marion General Hospital ..	Gen	NPA ^{asn}	41	26	6	244	2,090
Mocksville, 1,697—Davie Mocksville Hospital	Gen	Indiv	10	4	6	88	1,562
Monroe, 6,475—Union Ellen Fitzgerald Hospital ^{AO} ..	Gen	NPA ^{asn}	55	24	5	99	1,201
Moorestville, 6,682—Iredell Lowrance Hospital ^{AO}	Gen	NPA ^{asn}	69	55	10	380	3,061
Morehead City, 3,695—Carteret Morehead City Hospital ^{AO} ..	Gen	City	25	14	6	94	658
Morganton, 7,676—Burke Broad Oaks Sanatorium	N&M	Part	75	32	..	..	106
Grace Hospital ^{AO}	Gen	Church	82	58	18	383	3,066
State Hospital	Ment	State	2,828	2,618	..	..	751
Mt. Airy, 6,286—Surry Martin Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	44	47	6	84	1,627
Murphy, 1,873—Cherokee Petrie Hospital	Gen	Corp	25	11	6	71	570
Nashville, 1,171—Nash R. R. Gay Nash County Tuberculosis Sanatorium ..	TB	County	31	30	..	..	22
New Bern, 11,815—Craven St. Luke's Hospital	Gen	NPA ^{asn}	35	No data supplied	..	..	..
Newton, 5,407—Catawba Catawba General Hospital ..	Gen	Corp	37	24	10	192	1,056
North Wilkesboro, 4,478—Wilkes Wilkes Hospital ^{AO}	Gen	NPA ^{asn}	45	30	6	176	1,930
Oteen, 1,206—Buncombe Veterans Admin. Facility ^{AO} ..	TB	Vet	850	750	..	..	1,393
Oxford, 3,991—Granville Granville Hospital	Gen	NPA ^{asn}	22	12	5	45	611
Susie Clayton Cheatham Memorial Hospital	Gen	NPA ^{asn}	14	8	1	22	362
Pinebluff, 330—Moore Pinebluff Sanitarium	N&M	Indiv	38	21	..	..	130

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Pinehurst, 1,600—Moore Moore County Hospital ^{AO} ..	Gen	NPA ^{asn}	65	50	10	196	2,093
Raleigh, 46,897—Wake Central Prison Hospital	Inst	State	144	70	..	..	2,175
Mary Elizabeth Hospital ^{AO} ..	Gen	Corp	40	27	9	191	1,182
Rex Hospital ^{AO}	Gen	NPA ^{asn}	193	140	26	595	5,515
Royster Medical Center ^{AO} ..	Unit of State Hospital	Gen	100	69	8	269	1,821
St. Agnes Hospital ^{AO}	Gen	Church	2,400	2,429	..	..	972
State Hospital ^{AO}	Ment	State	56	52	..	..	61
Wake County Sanatorium ..	TB	CyCo	50	36	6	220	1,800
Reldsville, 10,357—Rockingham Memorial Hospital	Gen	NPA ^{asn}	50	36	6	410	3,521
Roanoke Rapids, 8,545—Haltfax Roanoke Rapids Hospital ^{AO} ..	Gen	NPA ^{asn}	90	88	13	410	3,521
Rocky Mount, 25,568—Nash Atlantic Coast Line Hosp. ^{AO} ..	Indus	NPA ^{asn}	50	29	..	..	799
Park View Hospital ^{AO}	Gen	NPA ^{asn}	110	79	10	240	2,767
Rocky Mount Sanitarium ^{AO} ..	Gen	NPA ^{asn}	74	44	6	156	1,801
Speight Stone Bunn Clinic-Hospital	Gen	Part	10	5	5	155	458
Roseboro, 939—Sampson Brewer Starling Clinic	Gen	Part	6	2	3	53	206
Rockboro, 4,599—Person Community Hospital	Gen	NPA ^{asn}	25	17	4	110	982
Rutherfordon, 2,326—Rutherford Rutherford Hospital ^{AO}	Gen	NPA ^{asn}	58	33	4	58	1,892
Sallsbury, 19,037—Rowan Rowan Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	117	67	13	265	2,682
Sanatorium, 200—Hoke North Carolina Sanatorium for the Treatment of Tuberculosis ^{AO}	TB	State	650	634	..	..	744
Sanford, 4,990—Lee Lee County Hospital	Gen	County	40	32	4	153	1,582
Shelby, 14,087—Cleveland Shelby Hospital ^{AO}	Gen	CyCo	66	69	10	490	3,246
Siler City, 2,197—Chatham Chatham Hospital	Gen	NPA ^{asn}	18	8	4	63	490
Smithfield, 3,678—Johnston Johnston County Hospital ..	Gen	NPA ^{asn}	35	16	10	44	563
Southport, 1,760—Brunswick J. Arthur Doshier Memorial Hospital	Gen	CyCo	50	16	4	38	538
Statesville, 11,440—Iredell Davis Hospital ^{AO}	Gen	NPA ^{asn}	130	98	15	168	3,907
H. F. Long Hospital ^{AO}	Gen	NPA ^{asn}	65	48	6	149	1,923
Sylva, 1,409—Jackson C. J. Harris Community Hospital	Gen	NPA ^{asn}	25	11	3	39	456
Tabor City, 1,552—Columbus Williams Clinic Hospital ..	Gen	Indiv	15	3	6	105	272
Tarboro, 7,148—Edgecombe Bass Memorial Hospital	Gen	Indiv	8	4	5	13	122
Edgecombe General Hospital ^{AO} ..	Gen	NPA ^{asn}	44	20	6	74	770
Thomasville, 11,041—Davidson City Memorial Hospital	Gen	NPA ^{asn}	36	26	3	185	1,065
Tryon, 2,943—Polk St. Luke's Hospital	Gen	NPA ^{asn}	29	14	6	92	739
Valdese, 2,615—Burke Valdese General Hospital ..	Gen	NPA ^{asn}	33	19	6	112	871
Wadesboro, 3,557—Anson Anson Sanatorium	Gen	NPA ^{asn}	50	34	11	100	1,760
Washington, 8,569—Beaufort Tayloe Hospital ^{AO}	Gen	NPA ^{asn}	69	40	6	217	1,692
Waynesville, 2,440—Haywood Haywood County Hospital ..	Gen	County	75	67	10	403	2,711
Whiteville, 3,011—Columbus Columbus County Hospital ..	Gen	NPA ^{asn}	55	23	10	194	1,798
Williamston, 3,966—Martin Brown Community Hospital ..	Gen	Indiv	10	6	6	15	402
Wilmington, 33,407—New Hanover Bulluck Hospital ^{AO}	Gen	Corp	52	13	3	46	730
Community Hospital ^{AO}	Gen	CyCo	47	39	12	261	1,374
James Walker Memorial Hospital ^{AO} ..	Gen	NPA ^{asn}	190	154	40	1,014	6,018
Wilmington Tuberculosis Sanatorium	TB	NPA ^{asn}	40	30	..	..	52
Wilson, 19,234—Wilson Carolina General Hospital ^{AO} ..	Gen	NPA ^{asn}	48	32	8	203	1,287
Woodard Herring Hospital ^{AO} ..	Gen	NPA ^{asn}	73	39	6	173	1,810
Winston Salem, 79,815—Forsyth City Hospital ^{AO}	Gen	City	354	244	43	1,153	8,892
City Memorial Hospital ^{AO}	White Division of City Hospital	Gen	44	15	6	85	290
Forsyth County Hospital ..	Gen	County	180	131	..	..	112
Forsyth County Sanatorium ..	TB	County	180	131	..	..	112
Kate Bittig Reynolds Memorial Hospital	Colored Division of City Hospital	Gen	130	122	23	554	3,330
North Carolina Baptist Hospital ^{AO} ..	Gen	Church	130	122	23	554	3,330
Wrightsville Sound, 200—New Hanover Babbs Hospital ^{AO}	Chil	NPA ^{asn}	35	18	2	..	578

Related Institutions

Ashboro, 6,951—Randolph Barnes and Griffin Clinic ..	Gen	Part	20	6	4	174	536
Ashville, 51,710—Buncombe Asheville Orthopedic Home ..	Orth	NPA ^{asn}	23	17	..	..	129
Pisgah Sanitarium and Hospital	Gen	Church	25	13	3	7	721
Sunset Heights	TB	Corp	16	12	..	..	41
Violet Hill Sanatorium	TB	Indiv	37	37	..	..	..

NORTH CAROLINA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Charlotte, 100,899—Meeklenburg Florence Crittenton Home... Mat		NPAso	26	25	20	31	40
Davidson, 1,550—Meeklenburg Davidsoo College Infirmary. Inst		NPAasn	25	3	..	...	253
1 Goldsboro, 17,274—Wayne Whispering Cedars Rest Home	Couv	Indiv	12	5	..	...	385
Sanatorium	TB	County	28	19	..	...	53
Henderson, 7,047—Yancey Scott Parker Sanatorium... TB		County	14	11	..	...	8
Kinston, 15,388—Lenoir Caswell Training School.... McDe		State	891	813	..	...	61
New Bern, 11,515—Craven Good Shepherd Hospital... Gen		Church	30	10	4	23	653
North Wilkesboro, 4,478—Wilkes Wilkes County Tuberculosis Hut	TB	County	14	12	..	...	25
Raleigh, 46,897—Wake McCauley Private Hospital... Gen		Indiv	10	3	2	17	103
North Carolina State School for the Blind and Deaf.... Inst		State	18	3	..	...	200
Saluda, 539—Polk Infants and Children's Sanatorium	Chil	Indiv	65	...	...	...	...
Spartanburg Baby Hospital Chil		NPAasn	64	32	..	...	219
Tarboro, 7,148—Edgecombe Edgecombe County Tuberculosis Sanatorium	TB	County	31	30	..	...	61
Wilson, 19,234—Wilson Mercy Hospital	Gen	CyCo	40	19	2	43	523

NORTH DAKOTA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Belcourt, 200—Rolette Turtle Mountain Hospital... Gen		IA	50	34	10	132	1,037
Bismarek, 15,490—Burleigh Bismarek Evangelical Hospital... Gen		Church	123	104	12	226	2,566
St. Alexius Hospital... Gen		Church	130	101	15	311	3,261
Bottineau, 1,739—Bottineau St. Andrew's Hospital... Gen		Church	75	56	12	194	1,946
Carrington, 1,850—Foster Carrington Hospital	Gen	Church	24	15	10	36	342
Devils Lake, 6,204—Ramsey General Hospital... Gen		NPAasn	42	35	8	79	1,788
Mercury Hospital... Gen		Church	100	80	26	223	1,791
Dickinson, 5,839—Stark St. Joseph's Hospital... Gen		Church	86	46	14	224	1,629
Drayton, 688—Pembina Drayton Hospital	Gen	Indiv	13	10	4	56	461
Elbowoods, 175—McLean Fort Berthold Indian Hosp. Gen		IA	25	17	6	56	627
Fargo, 32,580—Cass St. John's Hospital... Gen		Church	195	128	35	670	4,149
St. Luke's Hospital... Gen		Church	108	80	17	412	3,692
Veterans Admin. Facility... Gen		Vet	181	148	..	...	1,236
Fort Totten, 100—Benson Fort Totten Indian Hospital Gen		IA	37	19	4	51	643
Fort Yates, 1,000—Sioux Standing Rock Indian Hosp. Gen		IA	47	18	5	70	760
Grafton, 4,070—Walsh Grafton Deaconess Hospital... Gen		Church	50	41	10	294	1,546
Grand Forks, 20,228—Grand Forks Grand Forks Deaconess Hospital... Gen		NPAasn	85	70	20	412	3,516
St. Michael's Hospital... Gen		Church	65	58	15	359	2,444
Harvey, 1,851—Wells St. Aloisius Hospital... Gen		Church	30	20	8	155	1,038
... Gen		NPAasn	38	23	10	112	1,037
for Insane... Ment		State	1,929	1,920	..	...	430
Trinity Hospital... Gen		Church	70	41	12	204	1,656
Kenmare, 1,828—Ward Kenmare Deaconess Hospital Gen		Church	33	18	5	113	674
Langedoo, 1,646—Cavaller Mercy Hospital	Gen	Church	38	25	13	190	1,200
Mandan, 6,655—Morton Maodon Deaconess Hospital. Gen		Church	42	21	8	150	1,338
Mayville, 1,351—Trail Union Hospital	Gen	NPAso	16	0	7	90	359
McVie, 548—Nelson Community Hospital	Geo	Corp	15	6	4	60	306
Mioot, 16,577—Ward St. Joseph's Hospital... Gen		Church	125	66	15	341	2,420
Triolty Hospital... Gen		Church	169	123	30	518	5,314
New Rockford, 2,017—Eddy City Hospital	Gen	Church	34	16	6	90	550
Northwood, 1,063—Grand Forks Northwood Deaconess Hosp. Gen		NPAasn	25	18	6	56	301
Oakes, 1,663—Dickey Mercy Hospital	Gen	Church	15	5	5	82	301
Rolette, 460—Rolette Community Hospital	Gen	NPAasn	20	8	4	45	632

NORTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Rolla, 1,008—Rolette Rolla Community Hospital. Gen		City	26	11	6	102	512
Rugby, 2,215—Pierce Good Samaritan Hospital... Geo		Church	62	53	15	295	2,070
San Haven, —Rolette North Dakota State Tuberculosis Sanatorium... TB		State	368	307	..	...	276
Valley City, 5,017—Barnes Mercy Hospital... Gen		Church	100	55	15	236	2,233
... Gen		Church	22	12	5	44	153
... Gen		Church	40	34	10	162	1,445
... Gen		Church	100	50	14	157	1,840

Related Institutions

Bismarek, 15,490—Burleigh North Dakota State Peniten- tiary Hospital	Inst	State	29	10	..	...	312
Bowman, 967—Bowman Bowman Hospital	Gen	Indiv	12	5	6	54	223
Elgin, 583—Grant Elgin Hospital	Geo	Indiv	17	7	6	75	314
Fargo, 32,580—Cass Camp Maternity Hospital... Mat		Indiv	15	2	12	27	27
Cass County Hospital... Gen		County	30	17	4	54	465
City Detention Hospital... Iso		City	40	1	..	...	34
Florence Crittenton Home... Mat		NPAasn	56	24	24	49	84
Grafton, 4,070—Walsh Grafton State School... McDe		State	1,025	931	..	...	87

OHIO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Akron, 244,791—Summit Akron Clinic Hospital... Gen		Part	12	5	..	...	523
Children's Hospital... Chil		NPAasn	110	91	..	...	3,679
City Hospital... Gen		NPAasn	327	312	41	2,089	11,224
East Akron Community Hospital	Gen	NPAasn	100	...	...	1 Reorganized	...
Edwin Shaw Sanatorium... TB		County	204	171	..	...	230
Peoples Hospital... Gen		NPAasn	181	129	34	1,210	5,572
St. Thomas Hospital... Gen		Church	148	125	27	1,035	5,940
Alliance, 22,405—Stark Alliance City Hospital... Gen		City	85	50	15	433	1,975
Amherst, 2,890—Lorain Pleasant View Sanatorium... TB		County	96	88	..	...	75
Ashland, 12,453—Ashland Samaritan Hospital... Gen		NPAso	48	28	12	389	1,232
Ashtabula, 21,403—Ashtabula Ashtabula General Hospital... Gen		NPAso	74	55	11	312	2,079
Athens, 7,696—Athens Athens State Hospital... Ment		State	1,886	1,814	..	...	293
Sheltering Arms Hospital... Gen		Part	41	21	0	143	893
Barberton, 24,028—Summit Citizens Hospital	Gen	NPAso	57	37	18	441	1,751
Bedford, 7,390—Cuyahoga Bedford Municipal Hospital Gen		City	34	27	15	231	1,032
Bellaire, 13,799—Belmont City Hospital... Gen		NPAasn	50	27	10	351	1,220
Bellevue, 6,127—Huron Bellevue Hospital	Gen	NPAso	30	No data supplied	...	...	...
Berea, 6,025—Cuyahoga Community Hospital	Gen	NPAso	37	27	10	240	1,122
Brecksville, 1,900—Cuyahoga Veterans Admin. Facility... Gen		Vet	269	225	..	...	2,239
Bryan, 5,404—Williams Cameron Hospitals	Gen	NPAasn	16	11	5	139	574
Bueyrus, 9,727—Crawford Bueyrus City Hospital... Gen		City	62	41	9	275	1,324
Cambridge, 15,044—Guernsey Children and Maternity Hos- pital... MatCh		NPAasn	20	8	6	...	626
St. Francis Hospital... Gen		NPAasn	25	11	3	73	333
Swan Hospital	Geo	NPAso	30	14	4	52	...
Canton, 108,401—Stark Aultman Hospital... Geo		NPAasn	154	129	30	1,144	4,914
Little Flower Hospital... Unit of Mercy Hospital		County	202	181	33	1,606	7,297
Mersey Hospital... Gen		County	100	129	..	...	183
Molly Stark Sanatorium... TB		County	100	129	..	...	183
Celina, 4,841—Mercer Gibbons Hospital	Gen	NPAasn	25	16	4	212	872
Otis Hospital	Gen	NPAasn	26	14	4	63	687
Chagrin Falls, 2,505—Cuyahoga Windsor Hospital	N&M	Corp	60	59	..	...	251
Chilliothe, 20,129—Ross Chillicothe Hospital	Gen	NPAasn	55	34	10	185	1,003
Federal Reformatory Hosp... Inst		USPHS	73	38	..	...	1,206
Mt. Logan Sanatorium	TB	Counties	64	50	..	...	61
Veterans Admin. Facility... Ment		Vet	1,522	1,597	..	...	521
Cincinnati, 455,610—Hamilton Bethesda Hospital... Gen		Church	211	169	52	1,225	7,793
Children's Hospital... Chil		Church	203	142	..	...	4,914
Christ Hospital... Gen		Church	320	256	57	1,479	9,022
Christlao R. Holmes Hosp... Gen		City	52	37	..	...	1,177
Cincinnati General Hos- pital... Gen		City	900	631	65	2,453	16,776

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Cincinnati Sanitarium [▲]	N&M	Corp	75	68			214
Deaconess Hospital ^{▲▲}	Gen	Church	175	121	25	708	4,336
Good Samaritan Hosp ^{▲▲}	Gen	Church	600	382	90	2,069	13,616
Hamilton County Home and Chronic Disease Hospital	Chr	County	260	264	.	.	499
Hamilton County Tuberculosis Hospital [▲]	TB	County	583	531			608
Jewish Hospital ^{▲▲}	Gen	NPAssn	260	201	40	911	6,931
Longview State Hospital [▲]	Ment	State	2,819	2,796			561
Ohio Hospital for Women and Children	Unit	of Bethesda Hospital					
St Mary Hospital ^{▲▲}	Gen	Church	200	150	20	613	4,737
Circleville, 7,982—Pickaway							
Berger Hospital	Gen	City	25	10	6	127	606
Cleveland, 878 336—Cuyahoga							
Babies and Children's Hosp							
Booth Memorial Home and Hospital [▲]	Mat	Church	17	18	17	560	570
City Hospital ^{▲▲}	Gen	City	1,195	899	50	1,176	12,008
	TB	City	307	347	.		939
City Psychopathic Hospital	Unit	of City Hospital					
Cleveland Clinic Foundation Hospital ^{▲▲}	Gen	NPAssn	238	209			7,566
Cleveland State Hospital [▲]	Ment	State	2,421	2,572			644
East 54th Street Hospital	Gen	Corp	34	6	12	1	47
Evangelical Deaconess Hospital [▲]	Gen	Church	104	128	32	1,142	3,515
	TB	Church	28	28			36
Fairview Park Hospital ^{▲▲}	Gen	Church	136	104	51	1,075	4,402
Glenville Hospital [▲]	Gen	NPAssn	99	95	36	803	3,750
Grace Hospital [▲]	Gen	NPAssn	68	43	12	274	2,079
John H Lowman Memorial Pavilion	Unit	of City Hospital					
Lakeside Hospital	Unit	of University Hospitals					
Leonard O Hanna House	Unit	of University Hospitals					
Lutheran Hospital [▲]	Gen	Church	109	90	28	887	3,993
Maternity Hospital	Unit	of University Hospitals					
Mt Sinai Hospital ^{▲▲}	Gen	NPAssn	225	232	45	1,001	8,017
Polyclinic Hospital [▲]	Gen	NPAssn	105	20		596	4,046
St Alexis Hospital ^{▲▲}	Gen	Church	220	177			7,192
St Ann's Maternity Hosp [▲]	Mat	Church	67	58	59	2,992	2,641
St John's Hospital [▲]	Gen	Church	218	181	32	1,275	0,873
St Luke's Hospital ^{▲▲}	Gen	Church	332	289	65	1,564	10,432
St Vincent Charity Hospital ^{▲▲}	Gen	Church	267	210			7,280
	TB	Church	28	28			46
U S Marine Hospital [▲]	Gen	USPHS	306	236			3,200
University Hospitals ^{▲▲}	Gen	NPAssn	777	579	108	2,766	18,064
Woman's Hospital [▲]	Gen	NPAssn	93	80	39	698	3,807
Columbus, 306 087—Franklin							
Children's Hospital [▲]	Chil	NPAssn	132	100			2,837
Columbus State Hospital [▲]	Ment	State	2,600	2,547			539
Franklin County Tuberculosis Hospital [▲]	TB	County	309	279			302
Dr Gayer Sanitarium	N&M	Indiv	25	12			100
Grant Hospital [▲]	Gen	NPAssn	271	203	40	1,018	7,462
McMillen Sanitarium	N&M	Corp	40	25			214
Mercy Hospital [▲]	Gen	NPAssn	65	3	15	147	1,672
Mt Carmel Hospital [▲]	Gen	Church	225	190	23	1,263	6,578
St Ann's Maternity Hosp [▲]	Mat	Church	25	20	25	890	931
St Anthony Hospital	Gen	Church	202	17			1,277
St Francis Hospital ^{▲▲}	Gen	State	160	130			3,029
Starling Loving University Hospital ^{▲▲}	Gen	State	267	202	35	776	5,818
Station Hospital [▲]	Gen	Army	139	119	3	29	1,613
White Cross Hospital ^{▲▲}	Gen	Church	234	205	40	1,522	7,650
Conneaut, 9,350—Ashtabula							
Brown Memorial Hospital	Gen	NPAssn	30	20	8	232	968
Coshocton, 11,569—Coshocton							
Coshocton City Hospital [▲]	Gen	City	64	33	8	290	1,890
Covington, 1,945—Miami							

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins ‡	Number of Births	Admissions †
Fremont, 14,710—Sandusky Community Hospital	Gen	NP Assn	14	8	4	41	206
Memorial Hospital	Gen	NP Assn	60	58	15	400	2,568
Gallipolis, 7,832—Gallia Holzer Hospital	Gen	Part State	54	42	4	100	1,882
Ohio Hospital for Epileptics	Epil	State	2,170	2,054	.	.	236
Green Springs 930—Sandusky and Seneca Oak Ridge Sanatorium	TB	Indiv	76	57	.	.	132
Greenville, 7,745—Darke Wayne Hospital	Gen	NP Assn	50	20	10	209	909
Hamilton, 50,592—Butler Port Hamilton Hospital	Gen	NP Assn	86	63	24	386	2,410
Mercy Hospital	Gen	Church	190	130	30	751	4,313
Hillsboro, 4,713—Highland Hillsboro Hospital	Gen	NP Assn	20	9	4	71	486
Ironton, 15,851—Lawrence Charles S. Grny Deaconess Hospital	Gen	NP Assn	50	26	5	72	680
Lawrence County General Hospital	Gen	County	63	39	12	410	1,840
Kenton, 7,593—Hardin McKittrick Hospital	Gen	NP Assn	25	18	5	60	622
San Antonio Hospital	Gen	Church	27	23	6	89	702
Laurens, 200—Ottawa Station Hospital	Gen	Army	28	2	.	.	94
Lakewood, 69,160—Cuyahoga Lakewood Hospital	Gen	City	137	91	98	763	3,940
Ichabon, 3,890—Warren Blair Brothers Hospital	Gen	Part	8	6	3	70	330
Lima, 44,711—Allen District Tuberculosis Hosp	TB	Counties	125	118	.	.	126
Lima Memorial Hospital	Gen	NP Assn	124	104	21	639	4,575
Lima State Hospital	Ment	State	1,076	1,140	.	.	170
St. Rita's Hospital	Gen	Church	120	85	20	491	2,900
Lodi, 1,304—Medinn Lodi Hospital	Gen	NP Assn	40	22	9	306	1,246
Logan, 6,177—Hoeking Cherrington Hospital	Gen	NP Assn	35	11	5	47	800
Lorain, 44,120—Lorain St. Joseph's Hospital	Gen	Church	100	76	20	722	3,471
Macedonia, 734—Summit Hnwthornden State Hosp	Ment	State	1,000	873	.	.	818
Mansfield, 37,154—Richland Mansfield General Hosp	Gen	NP Assn	153	128	30	977	4,509
Richland County Tuberculosis Sanatorium	TB	County	20	24	..	..	27
Mmrettn 14,543—Washington Marietta Memorial Hospital	Gen	NP Assn	53	33	10	337	1,350
Marion, 30,817—Marion Marion City Hospital	Gen	City	50	44	10	501	2,630
Sawyer Sanatorium	N&M	Part	50	26	.	.	81
Martins Ferry, 14,729—Belmont Martins Ferry Hospital	Gen	NP Assn	93	85	13	499	3,333
.	Gen	NP Assn	107	70	14	627	3,285
.	Ment	State	3,395	3,303	.	.	875
.	TB	Corp	150	134	.	.	138
Dellhurst Sanitarium	N&M	Corp	40	.	.	.	no data supplied
Middletown, 31,220—Butler Middletown Hospital	Gen	NP Assn	146	99	28	807	3,600
Millersburg, 2,200—Holmes Holmes County Joel Pomerene Memorial Hospital	Gen	County	27	15	5	138	756
Mt. Vernon 10,122—Knowlton Avalon Sanatorium	TB	Indiv	105	70	.	.	134
Mercy Hospital	Gen	Church	65	33	10	351	2,643
Mt. Vernon Hospital	Gen	NP Assn	40	24	10	110	1,058
Ohio State Sanatorium	TB	State	240	191	.	.	327
Munroe Falls, 511—Summit Summit County Hospital	Inst	County	150	140	.	.	294
Napoleon, 4,825—Henry S. M. Heller Memorial Hosp	Gen	City	15	10	4	112	679
National Military Home, —Montgomery Veterans Admin. Facility	Gen	Vet	1,050	909	.	.	5,660
Newark, 31,487—Licking Licking County Tuberculosis Sanatorium	TB	County	57	38	.	.	60
Newark Hospital	Gen	NP Assn	100	74	21	538	2,676
New London, 1,606—Huron New London Hospital	Gen	NP Assn	9	4	3	30	168
New Philadelphia, 12,328—Tuscarawas Tuscarawas Valley Sanat	TB	County	70	30	.	.	41
North Roynilton (Brecksville P. O.)	TB	Cuyahoga	110	103	.	.	109
Mount Royal Sanatorium	TB	Corp	110	103	.	.	109
Norwalk, 8,211—Huron Norwalk Memorial Hospital	Gen	NP Assn	28	20	7	228	802
Oberlin 4,300—Toraln Allen Hospital, Oberlin College	Gen	NP Assn	37	25	5	123	1,408
Oxford 2,706—Butler Miami University Student Hospital	Inst	State	40	17	.	.	1,727
Palmessville, 12,200—Lake Lake County Memorial Hospital	Gen	County	70	77	14	592	4,193
Perryburg, 3,457—Wood Community Hospital	Gen	Indiv	13	4	3	57	794
Rheinfrenk Hospital	Gen	Indiv	12	6	.	.	23
Plqua, 16,049—Miami Memorial Hospital	Gen	NP Assn	77	57	12	448	2,060

Key to symbols and abbreviations is on page 1071

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Port Clinton, 4,505—Ottawa H. B. Mgruder Memorial Hospital	Gen	NPAasn	38	18	10	154	856
Portsmouth, 40,466—Scioto Mercy Hospital ^o	Gen	Church	66	58	9	293	2,398
Portsmouth General Hosp. ^o	Gen	City	90	59	10	418	2,625
Schirman Hospital ^o	Gen	NPAasn	50	26	5	59	863
Ravenna, 8,538—Portage Robinson Memorial Portage County Hospital	Gen	County	60	53	11	479	1,882
St. Clairsville, 2,797—Belmont Belmont Sanatorium	TB	County	56	45	..	..	53
Salem, 12,301—Columbiana Central Clinic and Hospital Gen Salem City Hospital ^o	Gen	NPAasn	32	27	6	134	1,038
Sandusky, 21,874—Erie Good Samaritan Hospital ^o	Gen	NPAasn	51	30	9	210	1,618
Providence Hospital	Gen	Church	50	39	15	314	1,549
Shelby, 6,643—Rehland Shelby Memorial Hospital	Gen	NPAasn	33	19	10	186	893
Sidney, 9,790—Shelby Wilson Memorial Hospital ^o	Gen	NPAasn	38	23	12	242	997
South Euclid, 6,146—Cuyahoga Rainbow Hospital for Crippled and Convalescent Children .....	..	..	..	..	..	..	..
Unit of University Hospitals, Cleveland							
Sanatorium	TB	County	120	102	..	..	118
Springfield City Hospital ^o	Gen	City	228	143	40	1,179	5,735
Stuebenville, 37,631—Jefferson Gill Memorial Hospital	Gen	Church	25	17	..	..	919
Ohio Valley Hospital ^o	Gen	NPAasn	164	146	31	1,108	5,700
Tiffin, 16,102—Seneca Mercy Hospital	Gen	Church	37	32	10	271	1,520
Toledo, 282,349—Lucas East Side Hospital	Gen	NPAasn	41	17	4	46	619
Flower Hospital ^o	Gen	Church	130	98	35	577	3,832
Lucas County General Hospital ^o	Gen	County	292	178	33	454	3,971
Mersey Hospital ^o	Gen	Church	222	138	50	830	5,144
Robinwood Hospital ^o	Gen	Church	98	44	13	252	1,909
St. Vincent's Hospital ^o	Gen	Church	301	293	45	925	8,792
Toledo Hospital ^o	Gen	NPAasn	270	191	50	1,169	7,958
Toledo State Hospital ^o	Ment	State	2,002	2,809	..	..	668
William W. Roche Memorial Tuberculosis Hospital	TB	County	166	158	..	..	208
Women's and Children's Hospital ^o	Gen	NPAasn	116	86	26	702	3,277
Troy, 9,697—Miami Stouder Memorial Hospital ^o	Gen	NPAasn	44	40	8	321	1,706
Urbana, 8,335—Champaign Champaign County Hospital	Gen	County	35	20	8	183	722
Van Wert, 9,227—Van Wert Van Wert County Hospital	Gen	NPAasn	44	27	6	170	1,103
Wadsworth, 6,405—Medina Wadsworth Municipal Hosp. Gen	Gen	City	37	29	12	243	962
Warren, 42,837—Trumbull St. Joseph's Riverside Hosp. Gen	Gen	Church	50	66	10	597	3,487
Trumbull County Tuberculosis Sanatorium	TB	County	46	47	..	..	77
Warren City Hospital ^o	Gen	NPAasn	117	104	29	920	4,513
.. .. TB ..	TB	City	435	430	..	..	384
Wnuseon, 3,016—Fulton De Ette Harrison Detwiler Memorial Hospital ^o	Gen	NPAasn	53	33	7	194	1,581
Willard, 4,261—Huron Hospital	Gen	City	30	20	6	84	941
.. .. TB ..	TB	Indiv	17	5	7	26	243
Wooster, 11,543—Wayne Beeson Hospital	Gen	NPAasn	22	12	6	143	619
Kinney Memorial Emergency Hospital	Gen	NPAasn	25	No data supplied	..	..	475
Wooster Hospital	Gen	NPAasn	25	12	6	..	475
.. .. TB ..	TB	Corp	50	42	..	..	283
.. .. TB ..	TB	Corp	20	15	4	76	602
Youngstown, 167,720—Mahoning Mahoning Tuberculosis Sanatorium	TB	County	180	158	..	..	190
.. .. TB ..	TB	Church	285	261	50	1,799	9,589
.. .. TB ..	TB	NPAasn	515	389	69	2,018	14,138
Bethesda Hospital	Gen	NPAasn	110	80	20	541	3,882
Good Samaritan Hospital ^o	Gen	Church	120	80	25	553	2,824
Related Institutions							
Akron, 214,791—Summit Goodyear Hospital and Dispensary	Indus	NPAasn	20	8	..	..	2,603
Apple Creek, 610—Wayne Institution for Feeble-minded MeDe	State	610	508	..	..	..	71
Bellevue, 9,808—Logan Harbert Hospital	ENT	Indiv	4	1	..	..	129
Bluffton, 2,977—Allen Bluffton Community Hosp. Gen	Gen	NPAasn	22	15	6	123	603

OHIO—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Cincinnati, 453,010—Hamilton Catherine Booth Home and Hospital	Mat	Church	49	21	45	200	206
Children's Convalescent Home of the Cincinnati Orphan Asylum	Inst	NPAasn	100	78	..	..	262
Children's Home	Inst	NPAasn	30	7	..	..	48
Home for Incurables	Incur	NPAasn	69	60	..	..	57
Jewish Convalescent and Foster Homes	Conv	NPAasn	25	19	..	..	153
Maple Knoll Hospital and Home for the Friendless	Mat	Chil	NPAssn	50	35	25	288
Ridge Rest Home	N&M	Corp	30	24	..	..	30
St. Francis Hospital	Chr	Cancer	Church	290	230	..	493
St. Joseph Maternity Hospital and Infant Asylum	Mat	Church	10	3	10	75	80
Cleveland, 878,836—Cuyahoga Children's Fresh Air Camp and Hospital	Conv	NPAasn	60	58	..	..	200
Florence Crittenton Home	Mat	NPAasn	15	12	12	26	21
Ingleside Home	N&M	NPAasn	100	80	..	..	300
Columbus, 306,087—Franklin Florence Crittenton Home	Mat	NPAasn	38	30	24	78	95
Franklin County Home	Inst	County	125	120	..	..	132
Institution for Feeble-minded MeDe	State	2,123	2,101	..	..	..	162
Ohio Penitentiary Hospital	Inst	State	185	114	..	..	5,161
Dayton, 210,718—Montgomery Barney Convalescent Home for Crippled Children	Orth	NPAasn	30	20	..	..	100
Wilson Schools	MeDe	Part	40	35	..	..	40
Delaware, 8,944—Delaware Girls' Industrial School Hospital	Inst	State	32	8	..	..	333
.. .. TB ..	TB	Church	24	19	..	..	14
.. .. TB ..	TB	Church	24	19	..	..	14
Granville, 1,502—Licking Denison University Hospital	Inst	NPAasn	24	3	..	..	330
Greenfield, 4,225—Highland Greenfield Hospital	Gen	NPAasn	20	8	..	..	81
Lancaster, 21,940—Fairfield Boys' Industrial School Hospital	Inst	State	100	16	..	..	622
Lima, 44,711—Allen Maples Sanatorium	Alcoh	Indiv	7	4	..	..	40
Marysville, 4,037—Union Harmon Hospital (Ohio Reformatory for Women)	Inst	State	34	6	4	4	120
Orient, 175—Pickaway Institution for Feeble-minded MeDe	State	2,660	2,823	..	..	..	210
Reynoldsburg, 632—Franklin Nightingale Cottage	TbChil	NPAasn	40	30	..	..	54
Springfield, 70,662—Clark Rely Memorial Hospital	Inst	NPAasn	280	243	..	..	233
State Soldiers Home, 900—Erie Ohio Soldiers and Sailors Home Hospital	Inst	State	96	77	..	..	761
Tiffin, 16,102—Seneca Kentucky Memorial Hosp.	Inst	NPAasn	50	7	..	..	510
Toledo, 282,349—Lucas Lucas County Hosp. Annex Chr	County	112	110	..	..	..	83
Toledo Society for Crippled Children Convalescent Home	Orth	NPAasn	74	42	..	..	92
Warren, 42,837—Trumbull Elm Manor	Alcoh	Indiv	8	2	..	..	41
.. .. TB ..	TB	City	170	161	..	..	277
.. .. TB ..	TB	Corp	65	25	..	..	14
.. .. TB ..	TB	Corp	15	7	..	..	46
.. .. TB ..	TB	Inst	NPAasn	25	4	..	407
Xenia, 10,633—Greene Ohio Soldiers' and Sailors' Orphans' Home Hospital	Inst	State	68	20	..	..	599
Yellow Springs, 1,640—Greene Antioch College Infirmary	Inst	NPAasn	10	5	..	..	455
Youngstown, 167,720—Mahoning Youngstown Municipal Hosp. Iso	City	60	4	..	..	..	61

OKLAHOMA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Altus, 8,593—Jackson Altus Hospital	Gen	Indiv	19	5	3	15	573
Alva, 5,655—Woods Alva General Hospital	Gen	City	23	21	6	221	1,115
Anadarko, 5,570—Caddo Anadarko Hospital	Gen	Part	22	9	4	6	57
Ardmore, 16,854—Carter Hardy Sanatorium	Gen	Indiv	45	23	8	134	1,227
von Keller Hosp. and Clinic	Gen	NPAasn	27	6	7	22	22

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Bartlesville, 16,267—Washington Washington County Memorial Hospital.....	Gen	County	55	28	13	331	1,439
Beaver, 1,366—Beaver Beaver Hospital.....	Gen	Part	20	8	3	92	526
Blackwell, 8,637—Kay Blackwell General Hospital..	Gen	NPAssn	37	23	6	187	1,038
Bristow, 6,050—Creek Cowart-Sisler Hospital.....	Gen	Part	17	5	5	71	498
Carnegie, 1,740—Caddo Carnegie Hosp. and Clinic..	Gen	Corp	12	7	5	135	485
Cherokee, 2,553—Alfalfa Masonic Hospital.....	Gen	NPAssn	40	3	10	94	935
Chickasha, 14,111—Grady Chickasha Hospital.....	Gen	Part	50	25	4	96	1,108
Cottage Hospital.....	Gen	Indiv	10	10	5	38	486
General Hospital.....	Gen	NPAssn	10	8	5	51	818
Claremore, 4,134—Rogers Claremore Indian Hospital..	Gen	IA	60	68	18	237	1,736
Clinton, 6,736—Custer Clinton Indian Hospital....	Gen	IA	32	18	5	40	594
Western Oklahoma Charity Hospital.....	Gen	State	100	60	0	217	2,326
Western Oklahoma Tuberculosis Sanatorium.....	TB	State	295	267	..	...	382
Concho, 290—Canadian Cheyenne and Arapaho Hospital.....	Gen	IA	40	30	8	73	798
Cordell, 2,776—Washita Florence Hospital.....	Gen	Indiv	30	3	7	49	209
Cushing, 7,703—Payne Masonic Hospital.....	Gen	NPAssn	30	19	0	106	802
Duncan, 9,207—Stephens Patterson Hospital.....	Gen	Indiv	30	8	5	97	617
Weeden Hospital.....	Gen	Indiv	50	19	8	81	816
Durant, 10,027—Bryan Durant Hospital.....	Gen	Corp	25	12	4	81	856
Evergreen Sanitarium.....	Gen	Indiv	21	5	6	59	255
Haynie-Coker Hospital.....	Gen	Indiv	11	10	2	79	485
Elk City, 5,021—Beckham Tisdal Hospital.....	Gen	Indiv	35	8	3	44	503
El Reno, 10,078—Canadian Catto Hospital.....	Gen	Indiv	19	6	3	34	203
El Reno Sanitarium.....	Gen	Indiv	35	15	0	163	921
Federal Reformatory.....	Inst	USPHS	66	26	..	...	629
Enid, 28,081—Garfield Enid General Hospital.....	Gen	NPAssn	78	60	10	148	1,854
Independence Hospital.....	Gen	NPAssn	14	6	4	47	307
St. Mary's Enid Springs Hospital.....	Gen	Church	75	26	12	306	1,496
University Hospital Foundation.....	Gen	NPAssn	65	35	10	267	1,841
Erick, 1,891—Beckham Stagner Clinic and Hosp....	Gen	Indiv	12	7	4	25	150
Fairfax, 2,327—Osage Fairfax Hospital.....	Gen	Indiv	10	3	3	34	270
Fort Sill, —Comanche Station Hospital.....	Gen	Army	557	271	10	130	9,238
Frederick, 5,109—Tillman Frederick Clinic Hospital....	Gen	Part	20	7	3	111	461
Spurgeon, Arrington and Allen Hospital and Clinic.....	Gen	Corp	16	6	4	100	556
Grandfield, 1,116—Tillman Grandfield Hospital.....	Gen	Indiv	10	3	4	75	150
Guthrie, 10,018—Logan Cimarron Valley Wesley Hospital.....	Gen	NPAssn	35	18	5	122	830
Henryetta, 6,905—Okmulgee Henryetta Hospital.....	Gen	Indiv	25	14	2	102	988
John Taylor Hospital.....	Gen	Indiv	18	8	3	56	600
Hobart, 5,177—Kiowa General Hospital.....	Gen	Indiv	22	0	5	201	726
Hobart Hospital.....	Gen	Corp	31	17	7	122	1,437
Holdenville, 6,632—Hughes Holdenville Hospital.....	Gen	Indiv	30	15	3	33	678
Fryor-Johnston-Kernick Clinic and Hospital.....	Gen	Part	12	10	4	132	496
Hollis, 2,732—Harmon Hollis Hospital.....	Gen	Indiv	15	5	3	65	440
Hominy, 3,267—Osage Hominy Hospital.....	Gen	Indiv	28	2	4	48	274
Hugo, 5,900—Choctaw Johnson Hospital.....	Gen	Indiv	9	3	5	73	274
Lawton, 18,055—Comanche Angus Hospital.....	Gen	Part	16	8	7	201	527
Kiowa Indian Hospital.....	Gen	IA	145	79	17	208	2,149
Southwestern Clinic Hospital	Gen	IA	31	26	..	...	132
Mangum, 4,193—Greer Border Hospital and Clinic..	Gen	Corp	32	18	10	321	1,124
Maud, 2,636—Seminole Maud Hospital.....	Gen	Corp	25	18	5	67	1,023
McAlester, 12,491—Pittsburg Albert Pike Hospital.....	Gen	Indiv	18	2	2	47	183
Central Oklahoma State Hospital Annex.....	McDe	State	65	No data supplied	..	...	220
St. Mary's Hospital.....	Gen	Church	55	11	7	87	546
Miami, 8,345—Ottawa Miami Baptist Hospital.....	Gen	Church	40	16	7	105	925

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Muskogee, 32,332—Muskogee Muskogee Provident Hosp....	Gen	CyCo	18	5	1	22	180
Oklahoma Baptist Hosp. 40.	Gen	Church	114	55	11	326	1,875
Veterans Admin. Facility.....	Gen	Vet	291	245	..	...	2,185
Norman, 11,429—Cleveland Central Oklahoma State Hospital.....	Gen	State	48	40	..	...	99
Ellison Infirmary.....	Ment	State	2,631	2,590	..	...	1,072
Okeene, 1,079—Blaine Okeene Hospital.....	Inst	State	50	12	..	...	1,326
Okemah, 3,811—Okfuskee Clinic Hospital.....	Gen	Indiv	9	3	2	65	248
Oklahoma City, 204,424—Oklahoma Bone and Joint Hospital and McBride Clinic.....	Gen	Corp	41	18	..	...	640
Coyne Campbell Sanitarium. N&M	Gen	Corp	75	47	..	...	596
Great Western Hospital.....	Gen	Corp	35	21	2	6	221
Moorman's Farm Sanat.....	TB	Indiv	25	8	..	...	81
Oklahoma City General Hospital.....	Gen	Corp	100	70	12	262	3,582
Polyclinic Hospital.....	Gen	Indiv	99	50	15	297	1,935
St. Anthony Hospital.....	Gen	Church	350	307	50	1,765	9,023
Samaritan Hospital.....	Gen	Indiv	44	20	8	170	1,068
University Hospitals.....	Gen	State	383	364	20	695	6,229
Wesley Hospital.....	Gen	Part	137	99	25	626	4,827
Okmulgee, 16,051—Okmulgee Ming-Vernon Hospital.....	Gen	Part	12	8	2	23	363
Okmulgee City Hospital.....	Gen	City	35	14	6	107	820
Pauls Valley, 5,104—Garvin Lindsey-Johnson-Shirley Hospital.....	Gen	Part	21	10	6	213	674
Pawhuska, 5,443—Osage Osage County Infirmary....	Gen	County	40	...	7	174	846
Pawhuska Municipal Hosp..	Gen	City	10	8	5	72	495
Pawnee, 2,742—Pawnee Pawnee-Poncea Hospital.....	Gen	IA	50	27	6	80	719
Picher, 5,848—Ottawa American Hospital.....	Gen	Indiv	40	5	3	4	283
Picher Hospital.....	Gen	Part	17	5	2	52	535
Ponea City, 16,704—Kay Ponea City Hospital.....	Gen	Church	53	40	12	438	2,310
Poteau, 4,020—Le Flore Woodson Hospital.....	Gen	Indiv	15	10	2	20	200
Prague, 1,422—Lincoln Rollins Hospital.....	Gen	Indiv	10	4	3	70	354
Sayre, 3,037—Beckham Sayre Hospital.....	Gen	Indiv	20	7	6	113	930
Seminole, 11,547—Seminole Barber Hospital.....	Gen	Corp	23	20	6	275	1,412
Shattuck, 1,275—Ellis Shattuck Hospital.....	Gen	Indiv	48	20	6	238	1,324
Shawnee, 22,053—Pottawatomie A. C. H. Hospital.....	Gen	Part	25	14	5	143	732
Shawnee Indian Sanat.....	TB	IA	150	103	..	...	139
Shawnee Municipal Hospital	Gen	City	59	22	6	244	1,561
Stillwater, 10,097—Payne Agriculture and Mechanical College Infirmary.....	Inst	State	50	12	..	...	1,003
Stillwater Municipal Hosp..	Gen	City	40	21	11	166	1,146
Sulphur, 4,970—Murray Soldiers Tubercular Sanat.....	Gen	State	80	70	..	...	188
Sulphur Hospital and Clinic	Gen	State	55	57	..	...	733
Supply, 414—Woodward Western Oklahoma Hospital	Ment	NPAssn	20	3	4	62	384
Taft, 772—Muskogee State Hospital for Negro Insane.....	Ment	State	1,500	1,486	..	...	497
Tablequah, 3,627—Cherokee Wm. W. Hastings Indian Hospital.....	Gen	IA	72	51	13	212	1,314
Talhbina, 1,057—Le Flore Eastern Oklahoma State Tuberculosis Sanatorium...	TB	State	370	350	..	...	610
Talhbina Sanatorium and Hospital.....	Gen	IA	142	117	20	202	1,784
Tonkawa, 2,197—Kay Tonkawa Hospital.....	Gen	IA	100	81	..	...	162
Tulsa, 142,157—Tulsa Flower Hospital.....	Gen	Indiv	20	3	4	29	153
Hillcrest Memorial Hosp. 40.	Gen	NPAssn	30	12	12	235	953
Mercy Hospital for Crippled Children.....	Gen	NPAssn	225	91	24	700	5,430
Oakwood Sanitarium.....	Orth	Indiv	54	18	..	...	962
St. John's Hospital.....	N&M	Corp	40	15	..	...	178
Vinita, 5,653—Craig Eastern Oklahoma Hospital	Ment	Church	215	187	35	1,073	7,738
Vinita Hospital.....	Gen	State	2,608	2,621	..	...	690
Waurika, 2,458—Jefferson Waurika Hospital.....	Gen	Corp	14	8	4	100	551
Wewoka, 10,315—Seminole Knight Hospital.....	Gen	Corp	24	12	5	57	431
Wewoka Hospital.....	Gen	Corp	20	8	4	77	309
Woodward, 5,406—Woodward Memorial Hospital.....	Gen	Part	25	8	4	31	395
Woodward Memorial Hospital	Gen	Corp	25	15	4	228	1,017

Key to symbols and abbreviations is on page 1071

OKLAHOMA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Chelsea, 1,642—Rogers Jennings Hospital	Gen	Indiv	5	1	1	10	72
Chillico, 86—Kay Chillico Indian School Hosp. Inst	IA	IA	47	1	..	..	91
Enid, 28,081—Garfield Northern Oklahoma Hosp. MeDe	State	State	1,321	1,131	..	..	163
Fort Reno (El Reno P.O.), 150—Canadian Station Hospital	Gen	Army	14	1	..	..	85
McAlester, 12,401—Pittsburg Oklahoma State Prison Hospital	Inst	State	40	22	..	..	797
Okemah, 3,811—Okfuskee Okemah Hospital	Gen	Part	12	6	2	32	378
Oklahoma City, 204,424—Oklahoma Campbell Tuberculosis Sanit. TB	Part	Part	27	20	..	..	87
Home of Redeeming Love.. Mat	Church	Church	22	8	30	170	214
Tahlequah, 3,027—Cberokee Sequoyah Orphan Training School Hospital	Inst	IA	19	8	..	..	440
Tulsa, 142,157—Tulsa Tulsa General Hospital.....	Gen	Corp	65	No data supplied	..	..	..
Tulsa Junior League Home for Convalescent Crippled Children	Orth	NPAasn	30	27	..	..	92
Watonga, 2,828—Blaine Watonga Hospital	Gen	Part	12	3	1	55	295
Wynne Wood, 2,318—Garvin Wynnewood Hospital Clinie. Gen	Part	Part	7	4	3	55	212

OREGON

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Albany, 5,654—Linn Albany General Hospital....	Gen	NPAasn	52	21	8	157	1,078
Ashland, 4,744—Jackson Community Hospital	Gen	Indiv	23	10	7	89	610
Astoria, 10,389—Clatsop Columbia HospitalA	Gen	Church	91	53	12	221	2,283
St. Mary's HospitalA.....	Gen	Church	100	53	10	183	3,303
Baker, 9,342—Baker St. Elizabeth HospitalA.....	Gen	Church	85	50	16	292	2,600
Bend, 10,021—Deschutes St. Charles Hospital.....	Gen	Church	45	31	10	253	1,457
Burns, 2,566—Harney Valley View Hospital.....	Gen	Indiv	16	10	4	46	513
Corvallis, 8,392—Benton Ball Clinic	Gen	Indiv	17	10	7	48	366
Corvallis General Hospital..	Gen	NPAasn	38	16	6	176	693
Student Health Service, Oregon State College.....	Inst	State	30	14	..	..	849
Dallas, 3,579—Polk Dallas Hospital	Gen	Corp	25	13	4	71	446
Enterprise, 1,706—Wallowa Enterprise Hospital	Gen	Corp	14	5	3	51	301
Eugene, 20,838—Lane Eugene Hospital and ClinieA	Gen	Part	55	44	3	120	1,842
Sacred Heart General HospitalA	Gen	Church	94	73	26	1,018	3,363
Grants Pass, 6,028—Josephine Josephine County General Hospital	Gen	County	54	29	12	164	1,376
Hood River, 3,280—Hood River Hood River Hospital.....	Gen	NPAasn	38	23	5	97	1,520
Klamath Agency, 150—Klamath Klamath Indian Hospital.....	Gen	IA	27	12	5	49	464
La Grande, 7,747—Union St. Joseph Hospital.....	Gen	Church	45	19	13	133	824
Lakeview, 2,466—Lake Lakeview Hospital	Gen	Corp	20	7	4	47	465
Lebanon, 2,729—Linn Lebanon General Hospital..	Gen	NPAasn	28	20	6	301	1,289
Marshfield, 5,259—Coos McAuley Hospital	Gen	Church	45	30	10	175	1,408
Medford, 11,281—Jackson Sacred Heart HospitalA.....	Gen	Church	75	50	10	177	1,813
Milwaukie, 1,871—Clackamas Portland Open Air Sanat....	TB	NPAasn	40	..	..	..	110
Myrtle Point, 1,296—Coos Mast Hospital	Gen	Indiv	40	15	6	71	701
Newberg, 2,960—Yamhill Willamette Hospital	Gen	Corp	20	8	4	74	..
North Bend, 4,262—Coos Keizer Brothers Hospital... Gen	Part	Part	60	37	7	205	1,351
Ontario, 3,551—Malheur Holy Rosary HospitalA.....	Gen	Chureb	45	27	12	107	957
Oregon City, 6,124—Clackamas Hutchinson General Hosp..	Gen	Indiv	31	14	7	141	572
Oregon City HospitalA.....	Gen	Corp	53	46	10	267	1,233

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Pendleton, 8,847—Umatilla Eastern Oregon State Hospital	Ment	State	1,350	1,256	..	..	303
St. Anthony's HospitalA.....	Gen	Church	75	53	16	277	1,468
Portland, 305,394—Multnomah Coffey Memorial HospitalA..	Gen	Corp	100	52	..	..	3,853
Doernbecher Memorial Hospital for Children.....	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	283	262	60	2,032	8,464
Emanuel HospitalA.....	Gen	Church	310	227	36	1,057	9,010
Good Samaritan Hosp. A.....	Gen	NPAasn	75	40	10	89	1,484
Hahnemann HospitalA	Gen	NPAasn	100	75	8	26	112
Juvenile Hospital for Girls	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	325	307	..	..	61
Morningside Hospital	Gen	Corp	25	12	..	..	136
Multnomah Hospital.....	Gen	Corp	57	22	..	..	453
Portland Convalescent Hosp. Med	Indiv	Indiv	25	12	..	..	136
Portland Medical Hospital..	Gen	Corp	57	22	..	..	453
Portland Sanitarium and HospitalA.....	Gen	Church	130	117	31	1,108	5,773
Home	Mat	Church	35	27	7	76	97
Shriners Hospital for Crippled ChildrenA.....	Orth	NPAasn	60	52	..	..	349
Theo. B. Wilcox Memorial Hospital.....	Unit of Good Samaritan Hospital	Gen	435	485	30	640	8,854
University of Oregon Medical School Hospitals and ClinicsA.....	Gen	CoState	435	485	30	640	8,854
University State Tuberculosis Hospital.....	Unit of University of Oregon Medical School Hospitals and Clinics	Gen	407	348	..	..	2,732
Veterans Admin. FacilityA..	Gen	Vet	407	348	..	..	2,732
Prineville, 2,858—Crook Prineville General Hospital..	Gen	Indiv	25	14	6	129	891
Roseburg, 4,924—Douglas Mercy Hospital	Gen	Church	40	25	7	234	1,537
Veterans Admin. FacilityA..	Ment	Vet	578	480	..	..	371
St. Helens, 4,304—Columbia St. Helens General Hospital. Gen	Corp	Corp	19	7	6	51	631
Salem, 30,908—Marion Oregon State HospitalA.....	Ment	State	2,800	2,632	..	..	920
Oregon State Tuberculosis Hospital.....	TB	State	320	304	..	..	312
Salem Deaconess Hospital... Gen	Church	Church	100	74	10	410	3,273
Salem General HospitalA.....	Gen	NPAasn	74	55	13	434	2,680
Silverton, 2,935—Marion Silverton General Hospital..	Gen	NPAasn	20	12	9	185	509
The Dalles, 6,266—Wasco Eastern Oregon State Tuberculosis Hospital	TB	State	180	176	..	..	123
Mid-Columbia Hospital.....	Gen	Indiv	22	12	6	38	663
The Dalles HospitalA.....	Gen	Corp	75	32	12	289	1,419
Tillamook, 2,751—Tillamook Charlton Hospital	Gen	Indiv	35	21	8	118	1,043
Toledo, 2,288—Lincoln Lincoln Hospital	Gen	Part	24	14	5	103	451
Troutdale, 211—Multnomah Multnomah County Tuberculosis Pavilion	TB	County	41	29	..	..	77
Warm Springs, 150—Jefferson Warm Springs Hospital....	Gen	IA	23	10	6	15	306

Related Institutions

Chemawa, 700—Marion Chemawa Indian Hospital..	Gen	IA	49	14	3	18	797
Coquille, 3,327—Coos Coquille Hospital	Gen	Indiv	27	No data supplied	..	..	..
Shield	Mat	NPAasn	10	8	17	30	45
Salem, 30,908—Marion Oregon Fairview Home.....	MeDe	State	1,103	1,021	..	..	123
Oregon State Penitentiary	Inst	State	40	22	..	..	752
Oregon State School for the Deaf	Inst	State	12	3	..	..	157
Waldport, 630—Lincoln Waldport Community Hosp. Gen	Indiv	Indiv	10	2	4	27	34

PENNSYLVANIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Ablington, 3,200—Montgomery Ablington Memorial HospitalA.....	Gen	NPAasn	279	213	51	932	6,650
Allenwood, 400—Union Devitt's Camp	TB	NPAasn	104	57	..	..	150

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Altoona, 80,214—Blair							
Altoona Hospital*AO	Gen	NPAasn	159	104	21	676	3,204
Mercy Hospital*AO	Gen	NPAasn	147	102	33	737	3,511
Ambler, 3,953—Montgomery							
Dufur Hospital	N&M	Indiv	65	40	..	..	92
Ashland, 7,045—Schuylkill							
Ashland State Hospital	Gen	State	173	134	20	548	4,183
Aspinwall (Sharpsburg P.O.), 4,716—Allegheny							
Veterans Admin. Facility	Gen	Vet	667	558	..	..	4,303
	TB	Vet	93	91	..	..	203
Beaver Falls, 17,098—Beaver							
Providence Hospital*AO	Gen	NPAasn	53	40	13	342	1,706
Bedford, 3,268—Bedford							
Thunias' Hospital	Gen	Indiv	21	5	4	33	185
Bellefonte, 5,304—Centre							
Centre County Hospital	Gen	NPAasn	53	51	16	433	1,465
Bellevue, 10,488—Allegheny							
Suburban General Hosp.*AO	Gen	NPAasn	100	71	22	396	2,648
Berwick, 13,181—Columbia							
Berwick Hospital	Gen	NPAasn	63	38	12	328	1,231
Bethlehem, 55,490—Northampton							
St. Luke's Hospital*AO	Gen	NPAasn	243	158	35	798	5,118
Bloomsburg, 9,799—Columbia							
Bloomsburg Hospital*AO	Gen	NPAasn	117	71	18	433	2,373
Blossburg, 1,955—Tioga							
Blossburg State Hospital	Gen	State	90	93	9	304	2,367
Bradock, 18,326—Allegheny							
Bradock General Hosp.*AO	Gen	NPAasn	133	104	12	1,014	3,752
Bradford, 17,691—McKean							
Bradford Hospital*AO	Gen	NPAasn	111	66	27	468	2,580
Brookville, 4,397—Jefferson							
Brookville Hospital	Gen	NPAasn	38	27	7	101	891
Brownsville, 8,015—Fayette							
Brownsville General Hosp.*AO	Gen	NPAasn	90	58	10	256	1,861
Bryn Mawr, 10,206—Montgomery							
Bryn Mawr Hospital*AO	Gen	Corp	235	167	29	764	4,875
Butler, 24,477—Butler							
Butler County Memorial Hospital*AO	Gen	NPAasn	148	101	24	593	4,248
Canonsburg, 12,599—Washington							
Canonsburg General Hospital*AO	Gen	NPAasn	72	55	18	481	2,617
Carbondale, 10,871—Lackawanna							
Carbondale General Hosp.*AO	Gen	NPAasn	69	43	14	247	1,793
St. Joseph's Hospital*AO	Gen	Chureb	88	58	10	202	1,552
Carlisle, 13,984—Cumberland							
Carlisle Hospital	Gen	NPAasn	77	57	18	377	2,214
Station Hospital	Gen	Army	60	53	2	26	792
Chambersburg, 14,852—Franklin							
Chambersburg Hospital	Gen	NPAasn	90	60	12	392	2,300
Chester, 59,285—Delaware							
Chester Hospital*AO	Gen	NPAasn	215	170	35	947	5,632
J. Lewis Crozer Homeopathic Hospital	Gen	GenIncur	85	63	20	505	2,318
Clarks Summit, 2,691—Lackawanna							
Hillside Home and Hospital for Mental Diseases	Ment	County	950	1,001	..	..	220
Clearfield, 9,372—Clearfield							
Clearfield Hospital*AO	Gen	NPAasn	108	72	18	310	2,665
Clifton Heights, 4,921—Delaware							
Burn Brae Hospital	N&M	Indiv	45	40	..	..	79
Coaldale, 6,163—Schuylkill							
Coaldale State Hospital	Gen	State	120	89	18	318	2,327
Coatesville, 14,006—Chester							
Clement Atkinson Memorial Hospital	Gen	Indiv	17	9	3	32	158
Coatesville Hospital*AO	Gen	NPAasn	87	66	11	335	1,916
Veterans Admin. Facility	Ment	Vet	1,513	1,515	..	..	235
Columbia, 11,547—Lancaster							
Columbia Hospital	Gen	NPAasn	45	24	10	182	858
Confluence, 1,035—Somerset							
Price Hospital	Gen	Indiv	13	3	4	29	125
Connellsville, 13,608—Fayette							
Connellsville State Hosp.*AO	Gen	State	97	65	15	373	1,980
Corry, 9,935—Erie							
Corry Hospital	Gen	NPAasn	40	25	8	260	1,541
Coudersport, 3,197—Potter							
Coudersport General Hosp.	Gen	NPAasn	25	15	5	134	655
Cresson, 2,500—Cambria							
Pennsylvania State Tuberculosis Sanatorium No. 2	TB	State	840	787	..	..	828
Danville, 7,122—Montour							
Danville State Hospital*AO	Ment	State	2,346	2,088	..	..	512
Geo. F. Geisinger Memorial Hospital*AO	Gen	NPAasn	154	128	20	513	5,351
Darby, 10,334—Delaware							
Fitzgerald-Mercy Hospital*AO	Gen	Church	103	183	60	1,332	5,126
Dixmont, 225—Allegheny							
Dixmont Hospital	N&M	NPAasn	1,000	1,149	..	..	85
Doylestown, 4,976—Bucks							
	N&M	Indiv	25	15	..	..	40
D							
	Gen	NPAasn	71	55	14	418	2,245
Du Bois Hospital	Gen	Church	51	20	11	226	1,326
Maple Avenue Hospital	Gen	NPAasn	73	38	7	161	1,444
Eagleview, 500—Montgomery							
Eagleview Sanatorium for Consumptives*	TB	NPAasn	188	175	..	..	215

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Enston, 33,589—Northampton							
Betts Hospital	Gen	NPAasn	39	28	14	301	1,118
Easton Hospital*AO	Gen	NPAasn	199	150	21	634	5,786
Easton Sanitarium	N&M	Indiv	30	16	..	..	40
East Stroudsburg, 6,404—Monroe							
General Hospital of Monroe County*AO	Gen	NPAasn	65	42	12	211	1,314
Elizabethtown, 4,315—Lancaster							
Philadelphia Freemasons' Memorial Hospital Masonic Homes	Gen	NPAasn	165	145	..	..	547
State Hospital for Crippled Children*AO	Orth	State	225	169	..	..	234
Ellwood City, 12,329—Lawrence							
Ellwood City Hospital	Gen	NPAasn	52	35	18	265	1,435
Elwyn, 200—Delaware							
Elwyn Training School	MeDe	NPAasn	1,090	1,020	..	..	71
Erie, 116,935—Erie							
Erie County Tuberculosis Hospital	TB	County	65	62	..	..	120
Hanot Hospital*AO	Gen	NPAasn	224	192	31	925	5,906
St. Vincent's Hospital*AO	Gen	NPAasn	261	256	73	1,635	9,202
Zem Zem Hospital for Crippled Children	Orth	NPAasn	48	37	..	..	52
Everett, 2,425—Bedford							
Everett Hospital	Gen	NPAasn	25	14	5	79	574
Franklin, 9,948—Venango							
Franklin Hospital	Gen	NPAasn	51	33	10	218	1,312
Gettysburg, 5,916—Adams							
Annie M. Warner Hospital	Gen	NPAasn	56	34	9	224	1,374
Gladwyne, 1,236—Montgomery							
Gladwyne Colony	N&M	Indiv	83	78	..	..	136
Greensburg, 16,743—Westmoreland							
Westmoreland Hospital	Gen	NPAasn	170	136	30	864	4,992
Greenville, 8,149—Mercer							
Greenville Hospital	Gen	NPAasn	76	27	14	285	1,425
Grove City, 6,296—Mercer							
Grove City Hospital	Gen	NPAasn	26	12	6	85	374
Hamburg, 3,717—Berks							
Pennsylvania State Sanatorium for Tuberculosis	TB	State	620	567	..	..	519
Hanover, 13,076—York							
Hanover General Hospital	Gen	NPAasn	80	40	18	426	1,029
Harrisburg, 83,883—Dauphin							
Harrisburg Hospital*AO	Gen	NPAasn	239	204	25	1,062	5,988
Harrisburg Polytechnic Hospital*AO	Gen	NPAasn	160	117	20	855	4,132
Harrisburg State Hosp.*AO	Ment	State	2,130	2,135	..	..	406
Keystone Hospital	Indiv	Indiv	27	20	7	109	537
Hazleton, 38,009—Luzerne							
Corrigan Hospital	Mat	Corp	18	..	10	..	543
Hazleton State Hospital*AO	Gen	State	148	138	18	662	5,476
Hollidaysburg, 5,910—Blair							
Hollidaysburg State Hosp.	Ment	State	375	337	..	..	140
Homestead, 19,041—Allegheny							
Homestead Hospital*AO	Gen	NPAasn	125	110	25	453	2,796
Honesdale, 5,687—Wayne							
Wayne County Memorial Hospital	Gen	NPAasn	33	22	7	147	892
Huntingdon, 7,170—Huntingdon							
J. O. Blair Memorial Hosp.*AO	Gen	NPAasn	70	56	14	264	2,062
Indiana, 10,050—Indiana							
Indiana Hospital*AO	Gen	NPAasn	170	117	20	342	4,232
Jersey Shore, 5,432—Lycoming							
Community Hospital	Gen	NPAasn	32	19	10	130	638
Johnstown, 66,668—Cambria							
Conemaugh Valley Memorial Hospital*AO	Gen	NPAasn	312	260	33	860	6,440
Lee Homeopathic Hospital	Gen	NPAasn	62	50	23	348	1,556
Mendenhall Maternity Hospital	GynMat	Part	20	12	20	242	261
Mercy Hospital*AO	Gen	Church	107	81	23	574	2,452
Kane, 6,133—McKean							
Community Hospital	Gen	NPAasn	59	39	12	173	1,391
Kane Summit Hospital	Gen	NPAasn	23	14	6	118	588
Kingston, 20,679—Luzerne							
Nesbitt Memorial Hosp.*AO	Gen	NPAasn	110	70	20	620	2,620
Kittanning, 7,550—Armstrong							
Armstrong County Hospital	Gen	NPAasn	83	60	10	288	1,970
Lancaster, 61,345—Lancaster							
Lancaster General Hosp.*AO	Gen	NPAasn	236	228	45	1,075	5,761
Rossmore Sanatorium	TB	CyCo	55	51	..	..	70
St. Joseph's Hospital*AO	Gen	Church	200	188	30	642	4,301
Lansdale, 9,316—Montgomery							
Elm Terrace Hospital	Gen	NPAasn	25	16	12	109	656
Litrope, 11,111—Westmoreland							
Litrope Hospital*AO	Gen	NPAasn	78	65	20	548	2,498
Laurelton, 327—Union							
Laurelton State Village	MeDe	State	931	751	..	..	200
Lebanon, 27,206—Lebanon							
Good Samaritan Hospital*AO	Gen	NPAasn	100	80	25	469	2,229
Lebanon Sanatorium	Gen	Corp	40	23	10	157	786
Leetsdale, 2,332—Allegheny							
D. T. Watson Home for Crippled Children	Orth	NPAasn	100	101	..	..	175
Lewisburg, 3,571—Union							
Evangelical Hospital	Gen	Church	35	20	18	252	581
U. S. Penitentiary Hospital	Inst	USPHS	84	49	..	..	1,228
Lewistown, 13,017—Mifflin							
Lewistown Hospital*AO	Gen	NPAasn	92	80	21	261	2,719

Key to symbols and abbreviations is on page 1071

PENNSYLVANIA—Continued

Hospitals and Sanitariums	Type of Service	Ownership or Control	Beds	Average Census	Basinets	Number of Births	Admissions	
Institute of the Pennsylvania Hospital**	N&M	NPAssn	60	44	..	...	885
Jeunes Hospital**	Cancer	NPAssn	68	45	..	...	617
Jefferson Medical College Hospital**	Gen	NPAssn	632	516	63	1,432	18,145	
Jerrish Hospital**	TB	NPAssn	42	37	..	...	134
Joseph Price Memorial Hospital	Gen	NPAssn	409	345	70	1,365	7,588	
Kensington Hospital for Women**	GynMat	NPAssn	66	44	35	910	1,010	
Lankenau Hospital**	Gen	NPAssn	239	182	31	462	4,173	
Lying-In Hospital	Unit of Pennsylvania Hospital							
Memorial Hospital**	Geo	NPAssn	92	81	19	377	2,442	
Mercy Hospital**	Gen	NPAssn	105	80	20	215	2,052	
Methodist Hospital**	Gen	Church	170	122	36	745	2,742	
Misericordia Hospital**	Gen	Church	102	151	38	1,047	4,918	
Mount Sinai Hospital**	Gen	NPAssn	262	220	55	1,023	6,600	
National Stomach Hospital	Gen	NPAssn	44	12	7	26	392	
Nazareth Hospital	Gen	Church	121	60	30	474	2,906	
Northeastern Hospital**	Gen	NPAssn	67	60	15	516	2,215	
Northern Liberties Hospital	Gen	NPAssn	67	41	11	170	1,024	
Northwestern General Hosp.	Unit of Temple University Hospital							
Pennsylvania Hospital**	Gen	NPAssn	433	328	130	2,031	8,923	
Pennsylvania Hospital, Department for Mental and Nervous Diseases**	N&M	NPAssn	225	175	..	...	256
Philadelphia General Hospital**	Gen	City	2,276	1,922	60	1,479	25,520	
Philadelphia Hospital for Contagious Diseases**	TB	City	400	...	..	...	1,521
Philadelphia Hospital for Contagious Diseases**	Iso	City	910	285	..	...	3,868
Philadelphia Psychiatric Hospital	TB	City	60	42	..	...	65
Philadelphia State Hospital	Ment	NPAssn	62	46	..	...	57
Philadelphia State Hospital	Ment	State	6,105	5,791	..	...	1,114
Presbyterian Hospital**	Geo	Church	307	224	42	704	5,543	
Preston Retreat	Mat	NPAssn	50	18	35	377	380	
Rush Hospital for Consumption and Allied Diseases	TB	NPAssn	166	89	..	...	467
St. Agnes Hospital	Gen	Church	346	147	78	806	3,497	
St. Christopher's Hospital for Children**	Chil	NPAssn	52	51	..	...	1,041
St. Joseph's Hospital**	Gen	Church	185	100	35	539	2,724	
St. Luke's and Children's Medical Center**	Gen	NPAssn	218	147	41	952	6,157	
St. Mary's Hospital**	Gen	Church	206	136	44	770	4,970	
St. Vincent's Hospital for Women and Children	Geo	Church	137	64	24	401	1,033	
Shriners Hospital for Crippled Children	Orth	NPAssn	120	101	..	...	456
Skin and Cancer Hospital	SkCa	NPAssn	31	19	..	...	189
Stetson Hospital	Gen	NPAssn	62	45	10	165	1,600	
Temple University Hospital**	Gen	NPAssn	432	361	41	1,474	0,047	
U. S. Naval Hospital**	Gen	Navy	951	743	..	...	8,023
Urologic Clinic	Urol	Part	15	7	..	...	313
Wills Hospital**	Eye	NPAssn	200	130	..	...	3,662
Woman's Hospital**	Gen	NPAssn	125	82	41	655	2,972	
Women's Homoeopathic Hospital**	Gen	NPAssn	100	74	40	541	2,658	
Philipsburg, 2,963-Centre	Gen	Indiv	15	7	6	67	203	
McGirk Sanatorium	Gen	State	132	101	18	354	3,312	
Philipsburg State Hospital	Gen	NPAssn	67	40	12	233	1,183	
Philipsburg State Hospital	**	Gen	NPAssn	514	375	64	1,795	9,477
Philipsburg State Hospital	**	Gen	NPAssn	40	18	10	123	611
Philipsburg State Hospital	**	Chil	NPAssn	194	140	3,692
Philipsburg State Hospital	**	TB	City	415	389	629
City Tuberculosis Hospital	Geo	NPAssn	309	242	111	3,167	6,575	
Elizabeth Steel Magee Hospital**	Gen	NPAssn	111	53	..	...	4,415
Eye, Ear, Nose and Throat Hospital**	ENT	NPAssn	10	8	..	...	22
Fairview Sanatorium	N&M	Corp	20	8	15	290	571	
Haddon Hospital	Gen	Corp	632	696	49	1,146	13,155	
Mercy Hospital**	Gen	Church	225	193	32	815	6,204	
Montefiore Hospital**	Geo	NPAssn	224	34	..	...	617
Municipal Hospital for Contagious Diseases	Iso	City	69	72	10	126	1,711	
Pasquot Hospital**	Geo	Church	16	101	21	194	4,225	
Pittsburgh Hospital**	Geo	NPAssn	167	137	..	...	3,350
Presbyterian Hospital**	Geo	NPAssn	207	137	..	...	3,350
Rosella Foundling and Maternity Hospital	MatCh	NPAssn	110	93	18	263	457	
St. Francis Hospital**	Gen	NPAssn	640	596	63	1,255	12,449	
St. John's General Hosp.**	Geo	NPAssn	157	151	43	1,533	5,003	
St. Joseph's Hospital and Dispensary**	Gen	Church	110	89	20	268	2,479	
St. Margaret Memorial Hospital**	Gen	Church	129	76	21	273	2,201	
Shady-side Hospital**	Gen	NPAssn	270	234	40	554	6,077	
Shady-side Hospital**	Gen	NPAssn	207	154	15	472	5,065	
South Side Hospital**	Gen	NPAssn	190	146	..	...	2,221
Tuberculosis League Hosp.	TB	USPHS	73	63	..	...	1,221
U. S. Marine Hospital	Gen							
Western Pennsylvania Hospital**	Gen	NPAssn	609	551	61	1,167	10,727	
Woman's Hospital	Gen	NPAssn	142	23	..	...	2,221

Key to symbols and abbreviations is on page 1071

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Pittsboro, 17,828—Luzerne							
Pittsboro Hospital*..... Gen	NPAssn		112	90	18	451	4,120
Polk, 3,600—Venango							
Polk State School..... MeDe	State		3,320	2,024	..	...	214
Pottstown, 20,194—Montgomery							
Hill School Infirmary..... Inst	NPAssn		40	7	..	...	428
Homeopathic Hospital*..... Gen	NPAssn		50	33	16	233	1,300
Pottstown Hospital*..... Gen	NPAssn		63	44	12	278	1,670
Pottsville, 24,530—Schuylkill							
Lemos B. Warner Hospital*..... Gen	Indlv		78	30	12	132	1,146
A. C. Milliken Hospital*..... Gen	NPAssn		72	48	18	402	1,998
Pottsville Hospital*..... Gen	NPAssn		154	115	17	456	2,942
Puoxsutaaway, 0,482—Jefferson							
Adrian Hospital*..... Gen	NPAssn		76	62	10	335	2,331
Quakertown, 5,150—Bucks							
Quakertown Hospital*..... Gen	NPAssn		54	31	12	221	964
Ransom, 150—Lackawanna							
Ransom Mental Hospital.... Ment	County		386	376	..	...	81
Reading, 110,568—Berks							
Berks County Tuberculosis Sanatorium*..... TB	County		138	138	..	...	140
Homeopathic Hospital*..... Gen	NPAssn		112	89	19	462	2,896
Reading Hospital*..... Gen	NPAssn		276	206	49	1,004	5,810
St. Joseph Hospital*..... Gen	Church		180	150	30	721	3,963
Renovo, 3,874—Clinton							
Recoo Hospital..... Gen	NPAssn		24	10	6	102	614
Retreat, 2,000—Luzerne							
Retreat Mental Hospital*... Ment	County		1,175	1,135	..	...	225
Ridgway, 6,253—Elk							
Elk County General Hosp... Gen	NPAssn		63	40	10	180	1,506
Ridley Park, 3,887—Delaware							
Taylor Hospital*..... Gen	NPAssn		70	67	18	347	2,180
Roaring Spring, 2,724—Blair							
Nason Hospital*..... Gen	NPAssn		52	37	12	220	1,241
Rochester, 7,441—Beaver							
Rochester General Hospital* Gen	NPAssn		87	80	12	487	2,448
St. Mary's, 7,633—Elk							
Andrew Kaul Memorial Hosp. Gen	Church		60	30	12	210	1,005
Sayre, 7,569—Bradford							
Robert Packer Hospital*+*+* Gen	NPAssn		304	201	21	687	6,942
Schuylkill Haven, 6,518—Schuylkill							
Schuylkill Haven State Hosp. Ment	County		583	550	..	...	128
Seranton, 140,404—Lackawanna							
Hahnemann Hospital*..... Gen	NPAssn		109	80	10	664	2,804
Lackawanna County Tuberculosis Hospital..... TB	County		150	206	..	...	143
Mercy Hospital*..... Gen	Church		84	70	20	450	2,458
Moses Taylor Hospital*+*+* Gen	NPAssn		120	93	..	...	1,074
St. Joseph's Children's and Maternity Hospital*..... MatCh	Church		185	153	24	59	176
St. Mary's Mater Misericordiae Hospital*..... Gen	Church		70	51	12	242	1,350
Seranton State Hospital*..... Gen	State		320	224	20	529	5,024
West Side Hospital*..... Gen	NPAssn		65	51	10	307	1,635
Sellersville, 2,115—Bucks							
Grand View Hospital*..... Gen	NPAssn		74	33	25	373	1,231
Sewickley, 5,614—Allegheny							
Sewickley Valley Hospital*+*+* Gen	NPAssn		113	99	27	729	4,136
Shamokin, 18,810—Northumberland							
Shamokin State Hospital*... Gen	State		91	81	16	607	2,923
Sharon, 25,622—Mercer							
Christian H. Buhl Hosp.*+*+* Gen	NPAssn		132	111	25	817	4,913
Shenandoah, 19,700—Schuylkill							
Loeust Mountain State Hospital*..... Gen	State		77	74	14	392	2,021
Somerset, 5,430—Somerset							
Somerset Community Hosp... Geo	NPAssn		70	50	10	165	1,902
South Mountain, 200—Franklin							
Pennsylvania State Sanatorium No. 1 (Mont Alto). TB	State		1,700	1,040	..	...	805
Spangler, 3,201—Cambria							
Micars' Hospital of Northern Cambria..... Gen	NPAssn		86	64	10	360	2,310
State College, 6,226—Centre							
Pennsylvania State College Health Service Hospital*... Inst	State		30	10	..	...	922
Sunbury, 15,402—Northumberland							
Mary M. Packer Hospital*..... Gen	NPAssn		74	60	14	352	2,293
Susquehanna, 2,740—Susquehanna							
Simon H. Barnes Memorial Hospital*..... Geo	NPAssn		10	12	5	52	319
Tarentum, 9,846—Allegheny							
Allegheny Valley Hospital*+*+* Gen	NPAssn		95	89	17	557	3,234
Taylor, 9,002—Lackawanna							
Taylor Hospital*..... Gen	NPAssn		41	48	13	312	2,005
Titusville, 8,126—Crawford							
Titusville Hospital*..... Gen	NPAssn		40	27	15	200	1,045
Torrance, 600—Westmoreland							
Torrance State Hospital*... Meot	State		2,119	1,919	..	...	538
Uniontown, 21,810—Fayette							
Calontown Hospital*+*+* Gen	NPAssn		210	182	15	694	5,987
Warren, 14,591—Warren							
Warren General Hospital*..... Geo	NPAssn		91	68	16	468	2,538
Warren State Hospital*+*+* Ment	State		2,700	2,415	..	...	848
..... Gen	Corp		48	24	..	...	263
..... Gen	NPAssn		138	106	28	656	3,609
Waynesboro, 1,000—Wayne							
Farview State Hospital.... Ment	State		1,074	1,010	..	...	59

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Waynesboro, 10,231—Franklin							
Waynesboro Hospital..... Gen	NPAssn		57	39	15	309	1,280
Waynesburg, 4,891—Greene							
Greene County Memorial Hospital..... Gen	NPAssn		68	50	12	204	1,593
Wernersville, 1,160—Berks							
Wernersville State Hospital. Ment	State		1,590	1,563	..	...	364
West Chester, 13,280—Chester							
Chester County Hospital*+*+* Gen	NPAssn		148	102	28	602	3,407
Homeopathic Hospital of Chester County*..... Geo	NPAssn		62	44	15	251	1,505
Marshall Square Sanatorium N&M	Part		60	45	..	...	186
White Haven, 1,528—Luzerne							
White Haven Sanat.*+*+* TB	NPAssn		240	193	..	...	318
Wilkes-Barre, 86,236—Luzerne							
Mercy Hospital*+*+* Gen	Church		195	138	25	548	4,383
Wilkes-Barre General Hospital*+*+* Gen	NPAssn		360	226	43	960	7,630
Wyoming Valley Homeopathic Hospital*..... Gen	NPAssn		84	60	25	471	2,212
Wilkesburg, 29,853—Allegheny							
Columbia Hospital*+*+* Gen	Church		179	132	40	846	4,330
Williamsport, 44,355—Lycoming							
Rothfuss Clinic and Hosp... Gen	Indlv		25	8	6	74	405
Williamsport Hospital*+*+* Gen	NPAssn		231	165	44	921	5,563
Windber, 9,057—Somerset							
Windber Hospital*+*+* Gen	NPAssn		107	85	10	333	2,583
Woodville, 4,000—Allegheny							
Allegheny County Institution District Hospital..... GenInst	County		1,113	730	..	...	637
Woodville State Hospital*... Ment	State		2,766	...	..	Estab.	1941
York, 66,712—York							
West Side Sanatorium*..... Gen	Indlv		50	22	10	46	607
York Hospital*+*+* Gen	NPAssn		194	154	25	1,103	5,213
Related Institutions							
Bellefonte, 5,304—Centre							
Western State Penitentiary Hospital..... Inst	State		22	15	..	...	441
Bellevue, 10,488—Allegheny							
Salvation Army Women's Home and Hospital..... Mat	Church		10	7	10	85	119
Broomall, 800—Delaware							
Convalescent Hospital..... Conv	NPAssn		30	22	..	...	307
Bryn Mawr, 10,206—Montgomery							
Bryn Mawr College Infirmary Inst	NPAssn		20	7	..	...	509
Cambridge Springs, 1,807—Crawford							
San Rosario Sanatorium..... Conv	Church		32	12	..	...	281
Camp Hill, 3,630—Cumberland							
Pennsylvania Industrial School..... Inst	State		40	22	..	...	400
Chambersburg, 14,852—Franklin							
Chambersburg Maternity Home..... Mat	Part		9	4	9	164	167
Chester, 59,255—Delaware							
Mercy Hospital..... Gen	NPAssn		30	14	8	124	588
Darby, 10,334—Delaware							
St. Francis' Country House. Ineur	Church		85	45	..	...	350
Ebensburg, 3,719—Cambria							
Cambria County Hospital*... Inst	County		110	103	..	...	200
Embsville, 500—Chester							
Embsville State Hospital... Ment	State		350	340	..	...	105
Erie, 116,955—Erie							
Lakeview Hospital..... Iso	City		84	...	..	...	...
Harmarville, 900—Allegheny							
Harmarville Convalescent Home..... Conv	NPAssn		40	43	30	...	356
Harrisburg, 83,893—Dauphin							
Dauphin County Hospital*... Inst	County		150	145	..	...	141
Johostown, 66,668—Cambria							
Municipal Hospital..... Iso	City		30	6	..	...	50
Lancaster, 61,345—Lancaster							
Lancaster County Institution District*..... Ment	County		491	481	..	...	258
Langhorne, 1,221—Bucks							
Marydel School..... MeDe	Part		70	52	..	...	00
Mercer, 2,272—Mercer							
Mercer County Home and Hospital..... Ment	County		375	314	..	...	121
Middletown, 7,046—Dauphin							
Odd Fellows' Home..... Inst	NPAssn		37	37	..	...	22
Morgantown, 900—Washington							
Pennsylvania Training School..... Inst	State		40	15	..	...	625
North East, 3,704—Erie							
St. Barnabas' House by the Lake..... Ineur	Church		35	35	..	...	28
Oakbourne (West Chester P.O.), 100—Chester							
James C. Smith Memorial Home..... Conv	Church		23	12	..	...	270
Olyphant, 9,252—Lackawanna							
Blakely Home and Hospital. Ment	County		164	150	..	...	23
Philadelphia, 1,000—Philadelphia							
Belle Vis Belmont..... Indlv			75	66	..	...	165
Army.....							
Florence Crittenton Home.. Mat	NPAssn		14	13	14	37	137
Kenwood Sanatorium..... N&M	Corp		40	20	..	...	81

Key to symbols and abbreviations is on page 1071

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Philadelphia County Prison Hospital (Holmesburg)....	Inst	County	28	12	..	...	567
Philadelphia County Prison Hospital (Reed St.).....	Inst	County	34	5	..	...	344
Philadelphia Home for Incurables	Ineur	NPAasn	240	236	..	...	47
Pine Hall Convalescent Home	Conv	Indiv	20	18	..	...	30
Sharon Hall	Conv	Corp	60	45	..	...	55
Pittsburgh, 671,659—Allegheny Hasley Nursing Home and Hos- pital	Conv	Indiv	17	10	..	...	30
Industrial Home for Crippled Children	Orth	NPAasn	80	70	..	...	70
Western State Penitentiary Hospital	Inst	State	39	32	..	...	704
Retreat, 2,000—Luzerne Luzerne County Home and Infirmary	Inst	County	500	241	..	...	53
Rochester, 7,441—Beaver Passavant Memorial Homes for the Care of Epileptics. Epil	Church	Church	139	140	..	...	22
Seranton, 140,404—Laekawanna Municipal Contagious Dis- ease Hospital	Iso	City	45	7	..	...	65
Selinsgrove, 2,877—Snyder Selinsgrove State Colony for Epileptics	Epil	State	519	467	..	...	122
Somerset, 5,430—Somerset Somerset State Hospital....	Ment	State	508	495	..	...	103
Towanda, 4,154—Bradford Mills Hospital	Gen	Indiv	27	19	9	103	223
Wawa, 300—Delaware Sanatorium School	Orth	Indiv	23	23	..	...	23
Williamstown, 2,760—Dauphin Williams Valley Hospital....	Gen	NPAasn	24	2	2	1	20
Willow Grove, 12,000—Montgomery Willow Crest for Conval- escents	Conv	NPAasn	82	67	..	...	1,251

RHODE ISLAND

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Central Falls, 25,248—Providence Notre Dame Hospital.....	Gen	NPAasn	50	38	14	329	1,207
East Greenwich, 3,842—Kent Crawford Allen Memorial Hospital of Rhode Island Hospital, Providence							
East Greenwich Home	Nerv/Chil	NPAasn	50	45	..	...	85
Hillsgrove, 1,000—Kent St. Joseph's Hospital.....	TB	Church	50	38	..	...	37
Howard, 5,000—Providence State Hospital for Mental Diseases*.....	Ment	State	3,114	2,800	..	...	686
State Infirmary*	Gen	State	981	834	20	67	1,175
Newport, 30,532—Newport Newport Hospital*.....	Gen	NPAasn	158	115	32	568	3,566
Station Hospital	Gen	Army	70	30	..	...	1,044
U. S. Naval Hospital*.....	Gen	Navy	345	196	..	...	2,143
Pawtucket, 75,797—Providence Memorial Hospital*.....	Gen	NPAasn	106	139	34	862	3,902
Providence, 253,504—Providence Butler Hospital*.....	N&M	NPAasn	174	150	..	...	168
Charles V. Chapin Hos- pital*.....	Tb/Iso	N&M City	265	173	..	...	1,998
Homeopathic Hospital*.....	Gen	NPAasn	102	134	34	994	5,158
Jane Brown Memorial Hosp..	Unit of Rhode Island Hospital						
Miriam Hospital*.....	Gen	NPAasn	63	47	14	311	1,437
Providence Lying-In Hosp.*.....	Mat	NPAasn	160	126	160	3,607	3,076
Rhode Island Hospital*.....	Gen	NPAasn	463	371	..	...	9,236
St. Joseph Hospital*.....	Gen	Church	325	245	60	1,089	6,707
Wnkefield, 4,000—Washington South County Hospital.....	Gen	NPAasn	44	35	11	246	1,381
Wallum Lake, 100—Providence State Sanatorium*.....	TB	State	618	527	..	...	413
Westerly, 11,199—Washington Westerly Hospital*.....	Gen	NPAasn	61	37	12	241	1,166
Woonsocket, 49,303—Providence Woonsocket Hospital*.....	Gen	NPAasn	145	88	39	679	3,207
Related Institutions							
Hoxsie, 135—Kent Lakeside Home and Mary Murray Preventorium	TB	NPAasn	49	42	..	...	203
La Fayette, 600—Washington Exeter School	MeDe	State	767	769	..	...	75
Providence, 253,504—Providence Heath Sanatorium	Conv	Indiv	15	10	..	...	10
Heath Sanatorium Annex.....	Conv	Indiv	14	14	..	...	10
St. Elizabeth Home for Incurables	Ineur	Church	70	67	..	...	23

SOUTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Abbeville, 4,930—Abbeville Abbeville County Memorial Hospital	Gen	NPAasn	40	14	5	52	423
Aiken, 6,168—Aiken Aiken County Hospital.....	Gen	County	60	60	12	180	2,490
Anderson, 19,424—Anderson Anderson County Hospital*.....	Gen	NPAasn	113	78	0	464	4,215
Bennettsville, 4,895—Marlboro Marlboro County General Hospital*.....	Gen	NPAasn	33	26	5	169	1,333
Camden, 5,747—Kershaw Camden Hospital*.....	Gen	NPAasn	58	39	10	267	2,116
Charleston, 71,275—Charleston Baker Memorial Sanat.*.....	Gen	NPAasn	50	40	10	375	2,015
Roper Hospital*.....	Gen	NPAasn	325	297	30	965	8,586
St. Francis Xavier Infirmary*.....	Gen	Chureb	50	40	15	375	1,503
U. S. Naval Hospital*.....	Gen	Navy	89	61	4	32	854
Chester, 6,392—Chester Pryor Hospital	Gen	NPAasn	53	26	6	149	1,339
Clinton, 5,704—Laurens Hays Hospital	Gen	NPAasn	15	8	6	30	399
Columbia, 62,306—Richland Columbia Hospital*.....	Gen	County	275	272	30	1,037	9,037
Good Samaritan-Waverly Hospital*.....	Gen	NPAasn	53	30	6	54	801
Orthopedic Hospital	Orth	Indiv	16	14	..	...	275
Providence Hospital*.....	Gen	Church	96	56	14	343	2,190
Ridgewood Tuberculosis Camp	TB	NPAasn	70	37	..	...	31
South Carolina Baptist Hos- pital*.....	Gen	Church	103	74	6	160	2,584
South Carolina State Hosp.*.....	Ment	State	4,670	4,578	..	...	1,303
Veterans Admin. Facility*.....	Gen	Vet	614	485	..	...	4,341
Waverly Sanitarium	N&M	Corp	30	18	..	...	290
Conway, 5,066—Horry Conway Hospital*.....	Gen	NPAasn	65	37	11	480	2,841
Florence, 16,054—Florence Florence-Darlington Tubercu- losis Sanatorium	TB	Counties	100	90	..	...	189
McLeod Infirmary*.....	Gen	NPAasn	190	135	15	242	4,657
Saunders Memorial Hosp.*.....	Gen	NPAasn	72	43	7	107	1,996
Gaffney, 7,636—Cherokee Cherokee County Hospital..	Gen	County	50	29	4	81	1,196
Greenville, 34,734—Greenville Greenville County Tuberculo- sis Sanatorium	TB	County	81	76	..	...	65
Greenville General Hosp.*.....	Gen	City	286	218	30	767	7,693
Dr. Jervey's Private Hosp.*.....	ENT	Indiv	15	3	..	...	290
St. Francis Hospital*.....	Gen	Church	110	87	24	575	3,769
Shrivers Hospital for Crip- pled Children*.....	Orth	NPAasn	60	59	..	...	277
Working Benevolent Hosp.*.....	Gen	NPAasn	22	7	2	32	214
Greenwood, 13,020—Greenwood Brewer Hospital	Gen	NPAasn	26	19	6	45	719
Greenwood Hospital	Gen	NPAasn	73	46	6	353	1,920
Hartsville, 5,399—Darlington Byerly Hospital	Gen	NPAasn	43	32	4	290	2,317
Powder Hospital	Gen	Indiv	28	11	3	57	317
"	Gen	NPAasn	45	20	8	54	820
Whitehead Infirmary	Gen	Indiv	12	6	5	53	332
Lancaster, 4,430—Lancaster Marion Sims Memorial Hosp.	Gen	NPAasn	50	No data supplied			
Laurens, 6,894—Laurens Laurens County Hospital....	Gen	County	30	17	5	101	813
Moneys Corner, 1,165—Berkeley Berkeley County Hospital....	Gen/TB	NPAasn	58	32	6	197	1,094
Moultrieville, 515—Charleston Station Hospital	Gen	Army	102	49	4	20	2,552
Mullins, 4,322—Marion Martin's Private Hospital....	Gen	Indiv	32	18	9	96	1,464
Mullins Hospital*.....	Gen	NPAasn	58	23	7	123	1,503
Navy Yard, 1,025—Charleston Pinehaven Sanatorium	TB	County	61	No data supplied			
Newberry, 7,510—Newberry Newberry County Hospital..	Gen	NPAasn	23	16	5	125	1,803
Orangeburg, 10,521—Orangeburg Tri-County Hospital*.....	Gen	City	122	124	12	239	4,510
Urological Institute	Unit of Tri-County Hospital						
Parris Island, 250—Beaufort U. S. Naval Hospital*.....	Gen	Navy	162	83	6	33	2,023
Ridgeland, 1,021—Jasper Evelyn Ritter Hospital.....	Gen	Indiv	30	14	6	66	633
Rock Hill, 15,009—York St. Philip's Mercy Hospital..	Gen	Church	62	42	6	213	2,892
York County Hospital.....	Gen	County	87	40	13	214	1,714
Seneca, 2,155—Oconee Oconee County Hospital....	Gen	NPAasn	45	24	4	133	1,213
Six Mile, 152—Plekens	Gen	Indiv	40	29	3	42	624
"	Gen	NPAasn	45	25	6	153	2,355
Spartanburg General Hos- pital*.....	Gen	County	273	169	22	604	6,017
"	TB	County	90	27	..	...	26

Key to symbols and abbreviations is on page 1071

SOUTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
State Park, 100—Riehlend Palmetto Sanatorium.....	Unit of South Carolina Sanatorium	State	550	491	..	..	793
Summerville, 3,023—Dorechester County Hospital	Gen	County	49	29	11	122	1,072
Sumter, 15,874—Sumter Tuomey Hospital	Gen	NPAasn	114	85	16	364	3,093
Travellers Rest, 1,200—Greenville Coleman Hospital	Gen	Part	15	8	5	38	495
Union, 8,478—Union Wallace Thomson Hospital	Gen	City	25	17	3	122	901
Walterboro, 3,373—Colleton Charles Es Dorn Hospital	Gen	Indiv	42	29	10	115	2,495
Woodruff, 3,508—Spartanburg Workman Memorial Hosp.	Gen	Indiv	12	7	2	27	418
Related Institutions							
Clinton, 5,704—Laurens State Training School	McDe	State	858	816	..	..	71
Newberry, 7,510—Newberry People's Hospital	Gen	NPAasn	15	5	3	7	211
Sumter, 15,874—Sumter Camp Alice, Sumter County Tuberculosis Sanitarium	TB	CyCo	26	19	..	..	47

SOUTH DAKOTA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Aberdeen, 17,015—Brown St. Luke's Hospital	Gen	Chureh	125	91	25	483	4,548
Belle Fourche, 2,496—Butte John Burns Memorial Hosp.	Gen	NPAasn	25	5	10	77	540
Bowdle, 757—Edmunds Community Hospital	Gen	NPAasn	10	4	4	40	200
Brookings, 5,346—Brookings Brookings Municipal Hosp.	Gen	City	33	19	12	140	1,094
Burke, 602—Gregory Burke Hospital	Gen	NPAasn	14	7	5	74	331
Cheyenne Agency, 121—Dewey Cheyenne River Indian Hosp.	Gen	IA	40	20	6	55	512
Deadwood, 4,100—Lawrence St. Joseph's Hospital	Gen	Chureh	50	34	12	267	1,288
Dell Rapids, 1,706—Minnehaha Dell Rapids Hospital	Gen	Part	30	9	6	28	239
Eureka, 1,457—McPherson Eureka Community Hospital	Gen	NPAasn	21	14	6	112	705
Faulkton, 747—Faulk Faulk County Hospital	Gen	County	19	2	3	38	398
Flandreau, 2,212—Moody Flandreau Municipal Hosp.	Gen	City	18	9	5	78	313
Fort Meade, 850—Meade Station Hospital	Gen	Army	120	52	2	18	842
Fort Thompson, 160—Buffalo Crow Creek Hospital	Gen	IA	20	10	5	42	318
Gregory, 1,246—Gregory Mother of Grace Hospital	Gen	Chureh	18	10	6	69	496
Hot Springs, 4,083—Fall River Lutheran Sanatorium and Hospital	Gen	Chureh	50	28	4	44	444
Our Lady of Lourdes Hospital and Sanitarium	Gen	Chureh	65	38	6	53	903
Veterans Admin. Facility	Gen	Vet	249	156	..	..	1,243
	TB	Vet	32	25	..	..	31
Huron, 10,843—Dadle Sprague Hospital	Gen	NPAasn	54	44	8	212	1,775
Lead, 7,520—Lawrence Homestake Hospital	Indus	NPAasn	25	15	..	..	579
Lemmon, 1,781—Perkins Lemmon Hospital	Gen	Indiv	12	3	3	10	125
Madison, 5,018—Lake Madison Community Hosp.	Gen	NPAasn	50	27	10	125	923
Millbank, 2,745—Grant St. Bernard Providence Hospital	Gen	Chureh	27	15	8	131	563
Miller, 1,460—Hand Miller Hospital and Clinie	Gen	Part	18	11	5	100	325
Mitchell, 10,633—Davison Methodist State Hospital	Gen	Chureh	100	76	15	213	2,804
St. Joseph Hospital	Gen	Chureh	118	74	13	251	2,662
Mobridge, 3,008—Walworth Lowe Hospital	Gen	Indiv	20	9	6	60	433
Mobridge Hospital	Gen	NPAasn	30	20	2	85	740
New Underwood, 214—Pennington New Underwood Community Hospital	Gen	NPAasn	13	8	6	79	343
Pierre, 4,322—Hughes St. Mary's Hospital	Gen	Chureh	102	71	18	266	2,772
Pine Ridge, 618—Shannon Pine Ridge Hospital	Gen	IA	50	42	10	148	1,370
Rapid City, 13,844—Pennington Black Hills General Hospital	Gen	Chureh	50	37	10	145	1,327
St. John's McNamara Hospital	Gen	Chureh	75	54	16	265	2,164
Sioux Sanatorium	TB	IA	134	120	..	..	297

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Redfield, 2,428—Spink Baldwin Community Hosp.	Gen	City	14	7	4	74	338
Rosebud, 120—Todd Rosebud Agency Indian Hospital	Gen	IA	55	40	7	108	1,333
Sanator, 10—Custer South Dnkota State Sanatorium for Tuberculosis	TB	State	192	137	..	..	111
Sioux Falls, 40,832—Minnehaha McKennan Hospital	Gen	Chureh	113	73	26	493	2,955
Sioux Valley Hospital	Gen	NPAasn	140	96	26	447	3,274
Sisseton, 2,513—Roberts Sisseton Indian Hospital	Gen	IA	37	20	8	53	666
Volga, 632—Brookings Volga Hospital	Gen	NPAasn	16	8	6	69	395
Wintertown, 10,617—Codington Barton Hospital	Gen	NPAasn	65	52	12	211	1,845
Luther Hospital	Gen	Chureh	65	46	12	188	1,594
Webster, 2,173—Day Peabody Hospital	Gen	Indiv	50	25	9	169	...
Winnier, 2,426—Tripp Wilson Hospital	Gen	Indiv	10	4	3	39	199
Winnier General Hospital	Gen	Part	16	6	6	88	301
Yankton, 6,798—Yankton Sacred Heart Hospital	Gen	Chureh	170	97	20	276	2,819
Yankton State Hospital	Ment	State	1,887	1,592	..	..	364

Related Institutions

Flandreau, 2,212—Moody Flandreau Indian School Hospital	Inst	IA	32	7	..	..	345
Garretson, 666—Minnehaha DeVnll Hospital	Gen	Indiv	10	1	2	8	49
Hot Springs, 4,083—Fall River State Soldiers' Home Hosp.	Inst	State	36	19	..	..	200
Platte, 1,017—Charles Mix Platte Hospital	Gen	Indiv	8	...	5	7	44
Redfield, 2,428—Spink State School and Home for Feeble-minded	McDe	State	750	656	..	..	89
Sioux Falls, 40,832—Minnehaha Moe Memorial Hospital and Home	Inst	Chureh	65	49	..	..	200
Wagner, 1,319—Charles Mix Duggan Hospital	Gen	Indiv	12	9	4	53	360
Yankton Indian Hospital	Gen	IA	26	19	5	61	633

TENNESSEE

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Athens, 6,930—McMinn Epperson Clinic-Hospital	Gen	Indiv	50	10	8	137	669
Force Hospital	Gen	Part	20	12	5	108	680
Bristol, 14,004—Sullivan Hooks-English Infirmary	ENT	Part	10	4	..	..	485
Brownsville, 4,012—Haywood Haywood County Memorial Hospital	Gen	NPAasn	32	12	4	56	606
Chattanooga, 128,163—Hamilton Baroness Erlanger Hospital	Gen	CyCo	469	284	58	1,798	11,248
Earl Campbell Clinic	Gen	Indiv	18	9	7	78	620
Newell and Newell Sanit.	Gen	Part	65	35	3	27	2,161
Pine Breeze Sanatorium	TB	NPAasn	275	266	..	..	393
Physicians and Surgeons Hospital	Gen	Indiv	19	14	8	130	400
T. O. Thompson Children's Hospital	Chil	CyCo	84	50	..	..	1,276
Woman's Clinic	Mat	Indiv	15	7	9	148	300
Clarksville, 11,831—Montgomery Clarksville Home Infirmary	Gen	Indiv	25	3	..	6	280
Clarksville Hospital	Gen	NPAasn	40	23	7	102	954
Cleveland, 11,351—Bradley Physicians and Surgeons Hospital	Gen	Indiv	25	8	4	44	566
Speck Hospital	Gen	NPAasn	30	5	4	14	205
Columbin, 10,034—Maury Kings Daughters Hospital	Gen	NPAasn	50	21	8	117	1,217
Dayton, 1,870—Rhen Broyles Private Hospital	Gen	Indiv	12	5	3	25	234
Thomson Hospital	Gen	Indiv	10	8	4	20	300
Dyersburg, 10,034—Dyer Balrd-Brewer General Hosp.	Gen	Corp	38	14	8	90	829
Elizabethon, 8,516—Carter St. Elizabeth General Hosp.	Gen	Corp	25	12	5	154	702
Erwin, 3,350—Unicel Erwin Community Hospital	Gen	NPAasn	15	3	5	41	223
Etowah, 3,362—McMinn Etowah Hospital	Gen	Indiv	8	5	3	54	332
Franklin, 4,120—Williamson German-Rice-Guffee Hospital	Gen	Part	16	8	4	123	658

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Greenville, 6,784—Greene Hospital	Gen	Corp	60	21	3	51	881
Takoma Hospital and Sanatorium	Gen	NPAasn	52	37	6	90	1,434
Humboldt, 5,160—Gibson Oursler Clinic	Gen	Indlv	10	5	2	42	273
Jackson, 24,332—Madison Fitts-White Clinic	Gen	Part	25	17	8	79	727
Memorial Hospital	Gen	NPAasn	30	14	6	116	1,042
Webb-Williamson Hospital-Clinic	Gen	Corp	24	16	6	99	915
Jefferson City, 2,576—Jefferson Cherokee Dam Hospital	Indus	Fed	12	4	..	..	227
Jefferson Hospital	Gen	Indlv	30	12	3	97	865
Johnson City, 25,332—Washington Appalachian Hospital	Gen	NPAasn	64	45	13	384	2,875
Budd Clinic and Hospital	Gen	Indlv	20	6	2	19	255
Campbell's Eye, Ear, Nose and Throat Hospital	ENT	Indlv	10	3	..	..	700
Jones Eye, Ear, Nose and Throat Hospital	ENT	Part	28	17	..	..	1,438
Knoxville, 11,580—Knox Beverly Hills Sanatorium	TB	CyCo	145	114	..	..	126
Dr. H. E. Christenberry Eye, Ear, Nose and Throat Infirmary	ENT	Indlv	12	3	..	..	931
Eastern State Hospital	Ment	State	1,631	1,610	..	..	553
Fort Sanders Hospital	Gen	NPAasn	200	168	40	952	5,933
Knoxville General Hosp.	Gen	City	235	197	40	1,003	9,154
Reaves-Leach Infirmary	ENT	Part	7	4	..	..	342
St. Mary's Memorial Hospital	Gen	Church	100	73	25	328	3,455
Lawrenceburg, 3,567—Lawrence Lawrenceburg Sanatorium and Hospital	Gen	Church	20	11	4	54	600
Lebanon, 5,350—Wilson Martha Gaston Hospital	Gen	Part	20	7	4	44	450
McFarland Hospital	Gen	Indlv	35	28	5	158	1,523
Lenoir City, —London Fort Loudoun Dam Hosp.	Indus	Fed	10	..	..	Estab. 1941	..
Livingston, 1,527—Overton Lady Ann Hospital	Gen	Indlv	14	6	2	29	241
Loudon, 3,017—Loudon Loudon County Hospital	Gen	County	25	9	4	60	592
Madison College, 510—Davidson Madison Rural Sanatorium and Hospital	Gen	NPAasn	113	84	9	161	1,954
Maryville, 5,099—Blount Fort Craig Hospital	Gen	Indlv	40	20	6	73	923
Memphis, 292,942—Shelby Baptist Memorial Hosp.	Gen	Church	450	367	20	1,050	14,415
Collins Chapel Connectional Hospital	Gen	Church	50	35	10	15	770
Crippled Children's Hospital School	Orth	NPAasn	40	36	..	..	158
Gartly-Ramsay Hospital	Gen	Corp	42	24	8	48	1,206
Gen. Hosp. for Colored Adults	Orth	NPAasn	67	58	..	..	397
Gen. Hosp.	Gen	City	489	518	61	2,229	17,603
Gen. Hosp.	Gen	Corp	48	24	12	162	1,020
Gen. Hosp.	ENT	NPAasn	69	23	..	..	1,574
Gen. Hosp.	Gen	City	250	204	50	1,309	8,837
Gen. Hosp.	Gen	Church	222	170	46	1,177	7,472
Gen. Hosp.	Gen	Part	20	12	..	..	156
Turner-Gottgen Sanatorium	N&M	USPHS	130	104	..	..	1,905
U. S. Marine Hospital	Gen	Vet	450	369	..	..	4,579
Veterans Admin. Facility	N&M	Indlv	75	16	..	..	329
Wallace Sanatorium	N&M	Part	60	47	..	..	1,144
Willis C. Campbell Clinic	Orth	Part	..	..	..	..	..
Morristown, 8,050—Hamblen Hamblen Hospital	Gen	NPAasn	25	7	5	49	337
Hamblen Hospital	Gen	Indlv	20	8	4	70	712
Gen. Hosp.	n	Vet	536	454	..	..	2,572
Gen. Hosp.	n	NPAasn	42	22	8	250	1,254
Gen. Hosp.	ent	Vet	785	539	..	..	533
Gen. Hosp.	State	State	1,870	1,824	..	..	378
City View Sanatorium	N&M	Indlv	50	20	..	..	250
Davidson County Hospital	Ment	County	797	743	4	23	839
Davidson County Tuberculosis Hospital	TB	County	300	250	..	..	491
Geo. W. Hubbard Hospital of Meharry Medical College	Gen	NPAasn	165	108	21	302	2,511
Hospital for the Criminal Insane	Unit of	Central State Hospital	269	218	26	1,127	7,056
Nashville General Hosp.	Gen	City	104	90	18	591	4,863
Protestant Hospital	Gen	NPAasn	178	140	27	576	6,947
St. Thomas Hospital	Gen	Church	333	195	58	748	6,105
Vanderbilt University Hospital	Gen	NPAasn	350	314	..	..	234
Oakville, 163—Shelby Oakville Memorial Sanat.	TB	CyCo	24	8	4	26	490
Paris, 6,395—Henry McSwain Clinic	Gen	Indlv	25	7	3	43	554
Nobles Memorial Hospital	Gen	Part	..	..	..	..	..

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †
Pleasant Hill, 178—Cumberland "Upands" Cumberland Mountain Hospital and Sanatorium	GenTb	NPAasn	44	13	5	23	253
Pressmen's Home, 160—Hawkins International Printing Pressmen and Assistants' Union Sanatorium	TB	NPAasn	40	30	..	..	12
Pulaski, 5,314—Giles Pulaski Hospital	Gen	Indlv	22	8	2	42	502
Raleigh, 257—Shelby Cheelfield Farm Preventorium	Unit of	Oakville Memorial Sanatorium, Oakville	..	..	..	..	..
Rockwood, 3,931—Roane Chamberlain Memorial Hosp.	Gen	NPAasn	50	20	10	129	1,095
Rogersville, 2,018—Hawkins Lyons Hospital	Gen	Indlv	15	8	5	63	420
Sewanee, 530—Franklin Emerald-Hodgson Memorial Hospital	Gen	Church	25	12	11	59	793
Springfield, 6,668—Robertson Robertson County Hospital	Gen	County	45	14	6	24	430
Sweetwater, 2,593—Monroe Sweetwater Hospital	Gen	NPAasn	28	14	4	29	520
Union City, 7,256—Obion Union City Clinic	Gen	Corp	15	2	1	53	513
Western State Hospital—Hardeman Western State Hospital	Ment	State	2,078	2,198	..	..	635
Woodbury, 663—Cannon Good Samaritan Hospital	Gen	Indlv	26	15	6	61	622
Related Institutions							
Chattanooga, 128,163—Hamilton William L. Bork Memorial Hospital	Ment	County	302	282	..	..	141
Donelson, 110—Davidson Tennessee Home and Training School for Feeble-minded Persons	MeDe	State	520	650	..	..	37
Fayetteville, 4,654—Lincoln Lincoln County Hospital	Gen	County	32	21	3	54	900
Knoxville, 11,580—Knox Knox County Crippled Children's Hospital	Orth	NPAasn	30	10	..	..	132
Tennessee School for Deaf	Inst	State	18	8	..	..	671
University of Tennessee Hospital	Inst	State	13	5	..	..	397
..	Orth	Indlv	12	7	..	..	350
..	Inst	County	707	582	..	..	437
..	Orth	NPAasn	36	36	..	..	93
Tennessee State Penitentiary Hospital	Inst	State	60	30	..	..	700
Shelbyville, 6,537—Bedford Bedford County Hospital	Gen	NPAasn	35	5	6	89	1,627

TEXAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basins	Number of Births	Admissions †	
Abilene, 26,612—Taylor								
Abilene State Hospital.....	Epi	State	1,379	1,394	..	..	191
Abilene State Memorial Hosp. Δ.	Gen	Church	83	70	12	470	4,067	
.....	Gen	Church	28	15	10	169	929	
A								
Physicians and Surgeons Hospital.....	Gen	Corp	25	70	7	..	787	
Alpine, 3,866—Brewster								
Alpine Clinic Hospital.....	Gen	Indlv	10	2	3	25	132	
Amarillo, 51,686—Potter								
Northwest Texas Hospital Δ	GenTb	County	150	87	20	663	2,553	
Potter County Tuberculosis Cottage.....	Unit of	Northwest Texas Hospital	..	..	..	..	..
St. Anthony's Hospital Δ	Gen	Church	87	77	22	231	3,162	
Veterans Admin. Facility....	Gen	Vet	156	145	..	..	1,267
Atlanta, 2,453—Cass								
Ellington Memorial Hosp....	Gen	Part	11	4	4	102	370	
Austin, 57,930—Travis								
Austin State Hospital.....	Ment	State	2,761	2,773	..	..	425
Austin-Travis County Sanatorium.....	TB	CyCo	45	40	..	..	59
Brackenridge Hospital Δ	Gen	City	129	122	29	915	4,400	
Holy Cross Hospital.....	Gen	Church	22	10	8	56	372	
St. David's Hospital.....	Gen	Church	41	37	12	233	2,161	
Seton Hospital Δ	Gen	Church	100	73	18	546	4,119	
.....	al..	Gen	County	21	6	5	51	675
.....	osp.	Gen	NPAasn	14	3	2	13	227
Matagorda General Hospital	Gen	County	23	10	0	163	213	
Baytown, 5,194—Harris								
Baytown Hospital.....	Gen	NPAasn	24	7	4	59	627	

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Beaumont, 59,061—Jefferson	Gen	Church	146	97	14	670	4,779
Hotel Dieu Hospital ^o	Gen	Church	115	83	..	...	106
Jefferson County Tubercu- losis Hospital.....	TB	County	60	38	..	...	44
Jefferson County Tubercu- losis Hospital No. 2.....	TB	County	75	29	10	306	1,897
St. Therese Hospital.....	Gen	Church	30	14	6	40	517
Beeville, 6,789—Bee	Gen	Indiv	22	19	8	95	631
Beeville Hospital.....	Gen	Part	10	4	3	60	379
Thomas Memorial Hospital. Gen	Gen	Part	23	20	6	104	1,166
Bellville, 1,347—Austin	Gen	Part	450	441	..	...	193
Bellville Hospital.....	Gen	Part	10	7	5	75	342
Big Spring, 12,604—Howard	Gen	Corp	23	20	6	104	1,166
Big Spring Hospital.....	Gen	Corp	23	20	6	104	1,166
Big Spring State Hospital... Ment	Ment	State	450	441	..	...	193
Cowper Clinic and Hospital. Gen	Gen	Indiv	10	7	5	75	342
Malone and Hogan Clinic	Gen	Part	20	7	8	67	583
Hospital.....	Gen	Part	20	7	8	67	583
Bonham, 6,349—Fannin	Gen	NPAssn	40	13	6	127	540
S. B. Allen Memorial Hosp. ^o Gen	Gen	NPAssn	40	13	6	127	540
Borger, 10,018—Hutchinson	Gen	County	22	12	7	375	985
North Plains Hospital.....	Gen	County	22	12	7	375	985
Bowie, 3,470—Montague	Gen	Corp	15	9	4	52	467
Bowie Clinic Hospital.....	Gen	Corp	15	9	4	52	467
Brackettville, 2,633—Kinney	Gen	Army	50	28	2	2	882
Station Hospital.....	Gen	Army	50	28	2	2	882
Brady, 5,002—McCulloch	Gen	Part	50	30	10	203	1,279
Brady Hospital.....	Gen	Part	50	30	10	203	1,279
Brenham, 6,435—Washington	Gen	Corp	21	5	6	40	395
Sarah B. Milroy Memorial	Gen	Corp	21	5	6	40	395
Hospital.....	Gen	Corp	21	5	6	40	395
St. Francis Hospital.....	Gen	Church	25	8	6	63	405
Brownfield, 4,009—Terry	Gen	Part	22	11	6	133	606
Treadaway-Daniell Hospital. Gen	Gen	Part	22	11	6	133	606
Brownsville, 22,083—Cameron	Gen	Church	60	16	8	150	912
Mercy Hospital ^o	Gen	Church	60	16	8	150	912
Station Hospital.....	Gen	Army	50	11	1	23	498
Brownwood, 13,398—Brown	Gen	Corp	32	23	4	300	1,564
Brownwood Memorial Hosp.. Gen	Gen	Corp	32	23	4	300	1,564
Medical Arts Hospital.....	Gen	NPAssn	30	18	4	71	1,276
Bryan, 11,842—Brazos	Gen	NPAssn	30	18	4	71	1,276
Bryan-College Medical Cen- ter Hospital.....	Gen	Part	22	11	7	220	936
St. Joseph Hospital.....	Gen	Church	25	9	8	144	692
Burnet, 1,945—Burnet	Gen	Part	18	7	6	93	522
Shepherd-Allen Hospital.... Gen	Gen	Part	18	7	6	93	522
Burton, 850—Washington	Gen	Indiv	10	4	3	32	122
Burton Hospital.....	Gen	Indiv	10	4	3	32	122
Cameron, 5,040—Mlham	Gen	Indiv	28	13	6	149	695
Cameron Hospital.....	Gen	Indiv	28	13	6	149	695
Canadian, 2,151—Hemphill	Gen	Indiv	10	3	3	64	237
Canadian Hospital.....	Gen	Indiv	10	3	3	64	237
Canyon, 2,022—Randall	Gen	Indiv	15	7	4	68	742
Neblett Hospital.....	Gen	Indiv	15	7	4	68	742
Center, 3,010—Shelby	Gen	Indiv	13	6	3	74	558
Center Sanitarium.....	Gen	Indiv	13	6	3	74	558
Warren Hospital.....	Gen	Part	12	6	1	28	225
Childress, 4,164—Childress	Gen	Part	20	6	6	161	648
Jeter-Townsend Hospital... Gen	Gen	Part	20	6	6	161	648
Cisco, 4,868—Eastland	Gen	Indiv	22	5	4	26	564
Graham Sanitarium.....	Gen	Indiv	22	5	4	26	564
Clarendon, 2,431—Donley	Gen	NPAssn	20	13	8	152	442
Adair Hospital.....	Gen	NPAssn	20	13	8	152	442
Clarksville, 4,095—Red River	Gen	County	37	6	3	35	338
Red River County Hospital. Gen	Gen	County	37	6	3	35	338
Cleburne, 10,558—Johnson	Gen	Indiv	14	4	5	94	366
Cleburne Sanitarium.....	Gen	Indiv	14	4	5	94	366
Clifton, 1,732—Bosque	Gen	Part	10	4	4	...	274
Goodall and Wicheer Clinic	Gen	Part	10	4	4	...	274
Hospital.....	Gen	Part	10	4	4	...	274
Coleman, 6,054—Coleman	Gen	CyCo	50	12	4	126	520
Overall Memorial Hospital.. Gen	Gen	CyCo	50	12	4	126	520
College Station, 2,184—Brazos	Gen	State	125	33	..	...	5,239
Agricultural and Mechanical	Gen	State	125	33	..	...	5,239
College Hospital.....	Gen	State	125	33	..	...	5,239
Colorado City, 5,213—Mitchell	Gen	Indiv	14	8	8	68	531
C. L. Root Memorial Hosp. Gen	Gen	Indiv	14	8	8	68	531
Columbus, 2,422—Colorado	Gen	NPAssn	10	4	4	33	244
John F. Bell Memorial Hosp. Gen	Gen	NPAssn	10	4	4	33	244
Commerce, 4,609—Hunt	Gen	Indiv	10	6	4	63	320
Allen Clinic Hospital.....	Gen	Indiv	10	6	4	63	320
Leberman Hospital.....	Gen	Indiv	8	4	7	56	270
Coatree, 4,024—Montgomery	Gen	Part	18	6	4	12	300
Mary Swain Sanitarium.... Gen	Gen	Part	18	6	4	12	300
Montgomery County Hosp.. Gen	Gen	County	42	18	6	98	1,082
Corpus Christi, 57,301—Nueces	Gen	County	42	18	6	98	1,082
Fred Roberts Memorial Hos- pital ^o	Gen	NPAssn	55	37	10	231	2,030
Medical Professional Hosp... Gen	Gen	Corp	32	16	4	43	1,133
Spohn Hospital ^o	Gen	Church	85	62	20	614	4,027
Corsicana, 15,232—Navarro	Gen	NPAssn	20	5	2	17	270
Corsicana Hospital.....	Gen	NPAssn	20	5	2	17	270
Navarro Clinic Hospital.... Gen	Gen	Part	20	10	6	98	671
Physicians and Surgeons	Gen	Part	20	10	6	98	671
Hospital.....	Gen	Part	20	10	6	98	671
Crockett, 4,536—Houston	Gen	Indiv	130	50	7	15	420
Butler Hospital.....	Gen	Indiv	130	50	7	15	420
Jim Smith Memorial Hospital	Gen	Part	16	8	2	73	538
and Crockett Clinic.....	Gen	Part	16	8	2	73	538
Crystal City, 6,829—Zavala	Gen	Indiv	10	5	3	34	270
Crystal Hospital.....	Gen	Indiv	10	5	3	34	270

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Cuero, 5,474—De Witt	Gen	Church	35	12	6	40	520
Burns Hospital.....	Gen	Church	35	12	6	40	520
Lutheran Hospital.....	Gen	Part	35	21	6	41	434
Dalhart, 4,632—Dallam	Gen	Church	400	9	12	99	574
Loretto Hospital.....	Gen	Church	400	9	12	99	574
Dallas, 294,734—Dallas	Gen	Church	400	315	50	1,719	14,679
Baylor University Hosp. ^o *** Gen	Gen	Church	400	315	50	1,719	14,679
Beverly Hills Sanitarium.... N&M	N&M	Corp	30	25	..	...	191
Bradford Memorial Hospital	Gen	Corp	30	25	..	...	191
for Babies ^o	Chil	NPAssn	60	29	..	...	928
Carman Sanatorium.....	TB	Corp	25	18	..	...	65
Carroll-Girard Clinic.....	Orth	Part	17	10	..	...	330
Childrens Hospital ^o	Chil	NPAssn	63	30	..	...	817
Dallas Medical and Surgical	Gen	Part	27	17	..	...	1,651
Clinic Hospital ^o	Gen	Part	27	17	..	...	1,651
Gaston Hospital ^o	Gen	NPAssn	55	47	..	...	1,989
Medical Arts Hospital ^o	Gen	Corp	86	75	..	...	4,258
Methodist Hospital ^o *** Gen	Gen	Church	171	98	24	765	4,665
Nightingale Lying-In Hosp.. Unit of Baylor University Hospital	Gen	CyCo	355	200	36	1,640	9,764
Parkland Hospital ^o *** Gen	Gen	CyCo	355	200	36	1,640	9,764
Pinkston Clinic.....	Gen	Indiv	15	6	2	16	234
St. Paul's Hospital ^o *** Gen	Gen	Church	270	254	30	1,565	10,625
Texas Scottish Rite Hospital	Orth	NPAssn	50	51	..	...	684
for Crippled Children ^o	Orth	NPAssn	50	51	..	...	684
Timberlawn Sanitarium.... Ment	Ment	NPAssn	50	33	..	...	224
Veterans Admin. Facility ^o .. Gen	Vet	250	216	..	...	...	2,049
Woodlawn Hospital.....	TB	CyCo	123	100	..	...	212
Deatur, 2,578—Wise	Gen	Indiv	14	8	7	125	524
Deatur Clinic Hospital.....	Gen	Indiv	14	8	7	125	524
Rogers Hospital.....	Gen	Indiv	20	10	5	158	810
Denison, 15,351—Grayson	Gen	NPAssn	30	16	6	234	765
Denison City Hospital.....	Gen	NPAssn	30	16	6	234	765
Long-Sneed Clinic Hospital. Gen	Gen	Part	16	8	5	134	783
Missouri, Kansas, Texas Rail- road Employees Hospital... Indus	Indus	NPAssn	65	30	..	...	459
Denton, 11,192—Denton	Gen	Indiv	25	14	6	145	856
Denton Hospital and Clinic. Gen	Gen	Indiv	25	14	6	145	856
Medical and Surgical Clinic.. Gen	Gen	Part	11	5	4	100	400
Dublin, 2,546—Erath	Gen	Indiv	10	2	3	110	304
Guy Hospital.....	Gen	Indiv	10	2	3	110	304
East Bernard, 600—Wharton	Gen	Indiv	10	7	3	70	301
Albert Schumann Hospital. Gen	Gen	Indiv	10	7	3	70	301
Eden, 1,603—Concho	Gen	Indiv	14	...	..	Estab. 1941	...
Eden Clinic Hospital.....	Gen	Indiv	14	...	..	Estab. 1941	...
Edinburg, 8,718—Hidalgo	Gen	CyCo	40	21	12	92	737
Grandview Hospital.....	Gen	CyCo	40	21	12	92	737
El Campo, 3,906—Wharton	Gen	County	50	20	12	123	1,082
Nightingale Hospital.....	Gen	County	50	20	12	123	1,082
Electra, 5,588—Wichita	Gen	Indiv	25	8	7	110	416
Electra Hospital.....	Gen	Indiv	25	8	7	110	416
Elgin, 2,008—Scott	Gen	Corp	8	3	3	33	303
Fleming Hospital.....	Gen	Corp	8	3	3	33	303
El Paso, 96,810—El Paso	Gen	CyCo	147	100	20	935	4,242
El Paso City-County Hos- pital ^o	Gen	CyCo	147	100	20	935	4,242
El Paso Masonic Hospital ^o .. Gen	Gen	CyCo	45	31	..	...	137
Hotel Dieu, Sisters' Hosp. ^o Gen	Gen	NPAssn	50	26	15	205	1,103
Long Sanatorium.....	TB	Indiv	50	16	..	...	57
Newark Conference Maternity	Gen	Church	20	6	14	300	301
Hospital.....	Gen	Church	20	6	14	300	301
Providence Hospital.....	Gen	Indiv	40	8	3	...	1,238
St. Joseph's Sanatorium.... TB	TB	Church	75	28	..	...	108
Southwestern General Hosp. ^o Gen	Gen	Corp	125	72	20	370	3,229
William Beaumont General	Gen	Army	700	400	7	88	5,940
Hospital ^o	Gen	Army	700	400	7	88	5,940
Floresville, 1,708—Willson	Gen	Indiv	12	4	5	72	258
Blake Hospital.....	Gen	Indiv	12	4	5	72	258
Oxford Hospital.....	Gen	Indiv	10	3	2	14	154
Floydada, 2,726—Floyd	Gen	Indiv	8	3	3	43	201
Floydada Hospital and	Gen	Indiv	8	3	3	43	201
Clinic.....	Gen	Indiv	8	3	3	43	201
Fort Worth, 171,662—Tarrant	Gen	Church	75	63	12	574	2,785
All Saints Episcopal Hosp. ^o Gen	Gen	Church	75	63	12	574	2,785
City and County Hosp. ^o *** Gen	Gen	CyCo	163	135	20	1,102	5,616
W. I. Cook Memorial Hosp. ^o Gen	Gen	NPAssn	25	30	8	119	1,339
Ethel Ransom Memorial	Gen	Part	25	21	4	12	7,456
Hospital.....	Gen	Part	25	21	4	12	7,456
Fort Worth Children's Hos- pital ^o	Chil	NPAssn	35	21	..	...	389
Harris Memorial Methodist	Gen	Church	215	148	39	1,076	5,306
Hospital ^o	Gen	Church	215	148	39	1,076	5,306
St. Joseph's Hospital ^o *** Gen	Gen	Church	212	135	18	933	6,413
United States Public Health	Drug	USPHS	1,005	570	..	...	941
Service Hospital ^o	Drug	USPHS	1,005	570	..	...	941
Fredericksburg, 3,544—Gillespie	Gen	Corp	13	5	4	91	393
Fredericksburg Hospital and	Gen	Corp	13	5	4	91	393
Clinic.....	Gen	Corp	13	5	4	91	393
Kelley Memorial Hospital and	Gen	Indiv	12	5	5	30	225
Clinic.....	Gen	Indiv	12	5	5	30	225</

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Hospital for Crippled and Deformed Children.....	Unit	of John Sealy Hospital					
John Sealy Hospital*+*o.....	Gen	State	454	373	20	779	8,635
Negro Hospital.....	Unit	of John Sealy Hospital					
St. Mary's Infirmary*+*o.....	Gen	Church	200	101	25	750	3,221
U. S. Marine Hospital*.....	Gen	USPHS	210	169	..	..	2,514
Georgetown, 3,682—Williamson							
Martin Hospital.....	Gen	Indiv	20	5	4	30	261
Gilmer, 3,138—Upshur							
Elmwood Sanitarium.....	Gen	Indiv	16	6	4	47	364
Oak Lawn Sanitarium.....	Gen	Part	11	4	3	103	450
Ragland Clinic-Hospital.....	Gen	Part	19	0	6	198	961
Gladewater, 4,454—Gregg							
Gladewater Hospital.....	Gen	Indiv	10	6	4	43	265
Leake Clinic Hospital.....	Gen	Indiv	20	9	3	44	571
Gonzales, 4,722—Gonzales							
Holmes Hospital.....	Gen	Corp	25	5	3	30	400
Goose Creek, 6,929—Harris							
Goose Creek Hospital.....	Gen	Corp	12	No data supplied			
Lillie and Duke Hospital....	Gen	Part	18	7	6	122	465
Gorman, 1,157—Eastland							
Blackwell Sanitarium.....	Gen	Part	30	20	3	405	1,500
Graham, 5,175—Young							
Graham Hospital.....	Gen	NPAssn	18	11	5	180	832
Greenville, 13,995—Hunt							
Dr. E. P. Beeton's Hospital. Surg	Indiv		16	3	..	..	366
Goode and Phillips Hospital. Gen	Part		10	7	4	99	264
Dr. Joe Beeton's Hospital....	Indiv		20	8	3	44	564
Groesbeck, 2,272—Limestone							
Dr. Cox's Hospital.....	Gen	Indiv	8	2	5	43	175
Hallettsville, 1,551—Lavaca							
Renger Hospital.....	Gen	Indiv	12	5	3	24	320
Harlingen, 13,306—Cameron							
Valley Baptist Hospital.....	Gen	Church	50	22	10	140	1,028
Haskell, 3,051—Haskell							
Haskell County Hospital....	Gen	County	23	12	5	72	1,096
Henderson, 6,437—Rusk							
Henderson Memorial Hosp....	Gen	Corp	39	16	9	105	1,072
Hereford, 2,584—Deaf Smith							
Deaf Smith County Hosp....	Gen	County	22	5	6	138	310
Hillsboro, 7,799—Hill							
Boyd Sanitarium.....	Gen	Indiv	22	6	3	48	405
Houston, 894,514—Harris							
Autry Memorial Hospital.....							
School.....	Unit	of Houston Tuberculosis Hospital					
Dr. Greenwood's Sanitarium N&M	Corp		40	28	..	..	165
Heights Clinic-Hospital.....	Gen	Corp	40	19	7	328	1,394
Hermann Hospital*+*o.....	Gen	NPAssn	236	125	40	628	4,085
Houston Eye, Ear, Nose and Throat Hospital.....	ENT	Corp	24	10	..	..	1,118
Houston Negro Hospital.....	Gen	NPAssn	50	20	8	92	1,004
Houston Tuberculosis Hosp. TB	CyCo		172	156	..	..	333
Jefferson Davis Hosp.*+*o. Gen	CyCo		478	310	34	2,325	14,545
Memorial Hospital*o.....	Gen	Church	195	170	20	1,143	6,777
Methodist Hospital*+*o.....	Gen	Church	122	99	12	560	3,846
Montrose Clinic.....	N&M	Indiv	40	28	..	..	205
Park View Hospital.....	Gen	Corp	30	14	6	105	931
St. Joseph's Infirmary*+*o. Gen	Church		341	292	80	3,946	14,523
Southern Pacific Hospital*+*o Indus	NPAssn		120	70	..	..	1,645
Turner Urological Institute.. Urol	Part		16	10	..	..	423
Wright Clinic and Hospital. Gen	Indiv		27	17	5	103	771
Jacksboro, 2,368—Jack							
Jacksboro Hospital.....	Gen	Part	11	4	4	95	307
Jacksonville, 7,213—Cherokee							
Nan Travis Memorial Hosp. Gen	NPAssn		75	43	9	199	2,609
Jasper, 3,497—Jasper							
Hardy-Hancock Hospital....	Part		24	12	4	20	360
Richardson Hospital.....	Gen	Indiv	15	8	4	78	473
Kelly Field, —Bexar							
Station Hospital.....	Gen	Army	82	43	..	..	1,777
Kenedy, 2,891—Karnes							
Kenedy Clinic and Hospital. Gen	Corp		28	5	4	105	870
Kermit, 2,584—Winkler							
Robinson-McClure Clinic Hos- pital.....	Gen	Part	12	5	4	104	618
Kerrville, 5,572—Kerr							
Kerrville General Hospital... Gen	NPAssn		20	6	4	26	384
Kerrville State Sanatorium.. TB	State		178	174	..	..	1,507
Mountain View Sanatorium. TB	Indiv		20	18	..	..	24
Sunnyside Sanatorium.....	TB	Indiv	20	16	..	..	41
Kilgore, 6,708—Grege							
Kilgore Memorial Hospital.. Gen	Part		21	10	7	140	570
Kingsville, 7,782—Kleberg							
Kleberg County Hospital....	Gen	County	36	17	6	59	617
Knox City, 1,127—Knox							
Knox County Hospital.....	Gen	County	20	12	4	135	732
La Grange, 2,531—Fayette							
La Grange Hospital.....	Gen	Corp	45	14	5	111	729
Lamesa, 6,038—Dawson							
Lamesa General Hospital... Gen	Indiv		20	6	6	208	566
Price Hospital.....	Gen	Indiv	12	4	4	119	336
Lampasas, 3,426—Lampasas							
Rollins-Brook Hospital.....	Gen	Part	21	15	6	125	928
Laredo, 39,274—Webb							
Mercy Hospital.....	Gen	Church	75	26	8	215	1,370
Station Hospital.....	Gen	Army	37	6	1	4	177
La Tuna, 200—El Paso							
Federal Correctional Institu- tion.....	Inst	USPHS	26	25	..	..	622

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Legion, 100—Kerr							
Veterans Admin. Facility*+*o. Gen	Vet		201	239	..	..	1,192
Levelland, 3,091—Hoekley							
Phillips-Dupre Hospital	Gen	Part	218	189	..	..	357
Liberty, 3,037—Liberty							
Mercy Hospital.....	Gen	Church	10	7	5	146	661
Littlefield, 3,817—Lamb							
Littlefield Hosp. and Clinic..	Gen	Part	30	16	12	197	1,201
Payne-Shotwell Hospital and Clinic.....	Gen	Part	25	12	5	186	809
Livingston, 1,851—Polk							
Livingston Hospital.....	Gen	Part	23	11	8	193	1,365
Loebhart, 5,018—Caldwell							
.....	Gen	NPAssn	16	5	2	75	520
.....	Gen	NPAssn	20	6	2	24	222
.....							
Throat Hospital.....	ENT	NPAssn	25	3	..	..	1,000
Markham-McFee Memorial Hospital.....	Gen	NPAssn	35	10	8	161	752
Lubbock, 31,652—Lubbock							
Lubbock Sanitarium*o.....	Gen	Corp	85	54	15	183	3,129
St. Mary of the Plains Hosp. Gen	Church		30	23	6	271	1,584
West Texas Hospital*o.....	Gen	Corp	60	35	12	337	2,971
Lufkin, 9,567—Angelina							
Angelina County Hospital... Gen	County		40	50	5	360	2,189
Luling, 4,457—Caldwell							
.....	Gen	Part	12	5	3	44	332
.....							
Heath.....	Gen	Indiv	15	4	2	53	270
Marfa, 3,805—Presidio							
Station Hospital.....	Gen	Army	46	17	2	19	464
Marlin, 6,542—Falls							
Buie-Allen Hospital.....	Gen	Indiv	28	14	2	18	325
Buie Clinic and Marlin San- itarium Bath House and Hilton Hotel.....	Unit	of Buie-Allen Hospital					
Orthopedic Crippled Children's Hospital.....	Orth	NPAssn	40	28	..	..	451
Torbert Clinic and Hospital Gen	Corp		42	23	4	52	1,432
Marshall, 18,410—Harrison							
Kahn Memorial Hospital....	Gen	NPAssn	35	12	5	176	960
Texas and Pacific Railway Employees Hospital.....	Indus	NPAssn	105	44	..	..	1,996
Mathis, 1,950—San Patricio							
Mathis Hospital.....	Gen	Indiv	11	6	4	56	342
McAllen, 11,877—Hidalgo							
McAllen Municipal Hosp.*o. Gen	City		65	20	12	162	1,061
McKinney, 8,555—Collin							
McKinney City Hospital*o.. Gen	City		65	26	10	229	1,301
Memphis, 3,869—Hall							
Memphis Hospital.....	Gen	Indiv	15	5	2	33	283
Odum-Goodall Hospital.....	Gen	Part	14	8	4	71	713
Mercedes, 7,624—Hidalgo							
Mercedes General Hospital.. Gen	NPAssn		20	7	6	94	429
Meridian, 1,016—Bosque							
Holt Hospital and Clinic....	Gen	Indiv	10	2	4	41	191
Mexia, 6,410—Limestone							
Brown Memorial Hospital.. Gen	Indiv		17	5	3	13	316
Midland, 9,332—Midland							
Ryan Hospital-Clinic.....	Gen	Indiv	11	8	5	80	409
Western Clinic Hospital.....	Gen	Part	13	5	6	105	267
Mineral Wells, 6,303—Palo Pinto							
Nazareth Hospital*o.....	Gen	Church	40	15	6	106	920
Mt. Pleasant, 4,528—Titus							
Taylor Hospital and Clinic.. Gen	Part		12	5	3	75	164
Nacogdoches, 5,657—Nacogdoches							
City Memorial Hospital....	Gen	City	42	23	6	123	1,432
Nevada, 6,138—Grimes							
Brazos Valley Sanitarium... Gen	Corp		22	9	4	93	750
New Braunfels, 6,976—Comal							
New Braunfels Hospital....	Gen	Indiv	12	7	3	47	453
Newgulf, —Wharton							
Texas Gulf Sulphur Company Hospital.....	Gen	NPAssn	23	8	3	48	452
Odessa, 9,573—Ector							
Headlee Hospital.....	Gen	Indiv	25	16	10	216	1,034
Wood Hospital.....	Gen	Part	14	8	4	98	369
Olney, 3,497—Young							
Hamilton Hospital.....	Gen	City	20	2	7	92	512
Orange, 7,472—Orange							
Frances Ann Lutecher Hosp. Gen	Indiv		30	12	5	226	1,019
Paducah, 2,677—Cottle							
W. Q. Richards Memorial Hospital.....	Gen	Indiv	20	5	8	40	410
Palestine, 12,144—Anderson							
Missouri Pacific Lines Hosp. Indus	NPAssn		75	34	..	..	991
Palestine Sanitarium.....	Gen	Corp	23	8	5	..	521
Pampa, 12,895—Gray							
Worley Hospital.....	Gen	Indiv	45	30	11	406	2,220
Paris, 18,678—Lamar							
George Griffiths Memorial Hospital for Children.....	Unit	of Sanitarium of Paris					
Lamar County Hospital....	Gen	County	25	25	7	181	1,156
St. Joseph's Hospital*o.....	Gen	Church	65	14	8	106	971
Sanitarium of Paris*o.....	Gen	Corp	72	62	7	170	2,254
Pasadena, 3,436—Harris							
Pasadena Hosp. and Clinic.. Gen	Part		24	10	6	257	811
Pensacola, 3,164—Frio							
Dr. J. E. Beall Hospital....	Gen	Indiv	10	3	2	25	149
Goodnight Clinic Hospital.. Gen	Indiv		10	3	2	23	170

Key to symbols and abbreviations is on page 1071

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Pecos, 4,855—Reeves	Gen	Indiv	20	6	4	70	376
Camp and Camp Hospital..	Gen	NPAssn	12	4	3	94	319
Phillips, 2,500—Hutchinson	Gen	NPAssn	12	4	3	94	319
Pantex Hospital	Gen	NPAssn	12	4	3	94	319
Pittsburg, 2,916—Camp	Gen	Corp	20	4	6	41	232
Pittsburg Medical and Surgical Hospital	Gen	Corp	20	4	6	41	232
Plainview, 8,263—Hale	Gen	Part	70	33	11	183	1,440
Plainview Sanitarium and Clinic	Gen	Part	70	33	11	183	1,440
Port Arthur, 46,410—Jefferson	Gen	Church	150	90	20	708	3,696
St. Mary's Hospital, Gates Memorial	Gen	Church	150	90	20	708	3,696
Prairie View (Hempstead P.O.), 10—Waller	Gen	State	52	21	6	37	515
Prairie View State College Hospital	Gen	State	52	21	6	37	515
Quannah, 3,767—Hardeman	Gen	County	40	15	8	88	1,072
Memorial Hospital	Gen	County	40	15	8	88	1,072
Ranger, 4,553—Eastland	Gen	CyCo	30	23	5	83	824
City-County Hospital	Gen	CyCo	30	23	5	83	824
West Texas Hospital	Gen	Corp	18	12	3	41	489
Raymondville, 4,050—Willacy	Gen	Part	11	3	3	63	233
Raymondville Hospital	Gen	Part	11	3	3	63	233
Refugio, 4,077—Refugio	Gen	Church	45	12	6	54	591
Refugio County Hospital....	Gen	Church	45	12	6	54	591
Rio Grande City, 2,283—Starr	Gen	Army	30	7	2	12	268
Station Hospital	Gen	Army	30	7	2	12	268
Robstown, 6,789—Nueces	Gen	Corp	14	10	4	94	1,629
Robstown Hospital	Gen	Corp	14	10	4	94	1,629
Roscoe, 1,166—Nolan	Gen	Indiv	23	8	7	98	1,147
Young Hospital	Gen	Indiv	23	8	7	98	1,147
Rosenberg, 3,457—Fort Bend	Gen	Corp	24	7	5	102	583
Fort Bend Hospital	Gen	Corp	24	7	5	102	583
Rotan, 2,029—Fisher	Gen	Indiv	17	11	5	96	719
Callan Hospital	Gen	Indiv	17	11	5	96	719
Rusk, 5,699—Cherokee	Ment	State	2,415	2,435	..	..	370
Rusk State Hospital	Ment	State	2,415	2,435	..	..	370
San Angelo, 25,802—Tom Green	Gen	Corp	40	30	12	312	2,040
Clinic-Hospital	Gen	Corp	40	30	12	312	2,040
St. John's Hospital	Gen	Church	25	17	5	134	1,011
Shannon West Texas Memorial Hospital	Gen	NPAssn	100	69	15	407	4,057
San Antonio, 253,854—Bexar	Gen	Indiv	10	8	4	36	212
Central Clinic Hospital	Gen	Indiv	10	8	4	36	212
Grace Lutheran Sanatorium for Tuberculosis	TB	Church	36	31	..	..	103
Medical Arts Hospital	Gen	Corp	31	22	5	109	1,739
Medical and Surgical Memorial Hospital	Gen	NPAssn	100	84	15	699	4,848
Dr. Moody's Sanitarium	N&M	Corp	50	34	..	..	158
Nix Hospital	Gen	Corp	143	103	24	490	5,174
Physicians and Surgeons Hospital	Gen	Corp	60	50	14	405	2,409
Robert B. Green Memorial Hospital	Gen	County	230	153	15	1,051	4,456
Sanchez Clinic	Gen	Indiv	10	4	5	45	165
San Antonio State Hospital, Ment	Gen	State	2,737	2,873	..	..	537
Santa Rosa Hospital	Gen	Church	289	206	32	1,047	9,142
Station Hospital (Brooks Field)	Gen	Army	35	11	..	..	916
Station Hospital (Fort Sam Houston)	Gen	Army	1,200	636	23	352	11,250
Woodmen of the World War Memorial Hospital	TB	NPAssn	130	97	..	..	113
Sanatorium, 1,040—Tom Green	TB	State	1,000	875	..	..	1,928
State Tuberculosis Sanat...	TB	State	1,000	875	..	..	1,928
San Marcos, 6,006—Hays	Gen	NPAssn	25	5	3	55	543
Soldiers' and Sailors' Memorial Hospital	Gen	NPAssn	25	5	3	55	543
Santa Anna, 1,661—Coleman	Gen	Part	29	8	3	70	495
Sealy Hospital	Gen	Part	12	8	4	77	469
Seagraves, 3,225—Gaines	Gen	Part	12	8	4	77	469
Davidson Clinic Hospital	Gen	Part	12	8	4	77	469
Sealy, 1,800—Austin	Gen	Indiv	9	4	2	61	366
Sealy Hospital	Gen	Indiv	9	4	2	61	366
Seguin, 7,006—Guadalupe	Gen	NPAssn	22	5	4	65	433
Seguin Hospital	Gen	NPAssn	22	5	4	65	433
Seminole, 1,761—Gaines	Gen	Indiv	10	4	6	56	344
Scroggie Hospital	Gen	Indiv	10	4	6	56	344
Seymour, 3,328—Baylor	Gen	County	16	6	4	132	571
Baylor County Hospital....	Gen	County	16	6	4	132	571
Shamrock, 3,123—Wheeler	Gen	Part	14	5	3	101	424
Shamrock Clinic Hospital....	Gen	Part	14	5	3	101	424
Shamrock General Hospital. Gen	Gen	Indiv	25	9	5	60	435
Sherman, 17,156—Grayson	Gen	Church	50	35	6	161	1,751
St. Vincent's Hospital	Gen	NPAssn	66	43	8	168	2,393
Wilson N. Jones Hospital	Gen	NPAssn	66	43	8	168	2,393
Shiner, 1,520—Lavaca	Gen	Indiv	18	9	3	42	408
Dr. Wagner's Hospital	Gen	Indiv	18	9	3	42	408
Slaton, 3,587—Lubbock	Gen	Church	50	16	6	75	568
Mercy Hospital	Gen	Church	50	16	6	75	568
Snyder, 3,815—Scurry	Gen	Corp	24	..	5	95	623
Snyder General Hospital....	Gen	Corp	24	..	5	95	623
Spur, 2,136—Dickens	Gen	Indiv	20	9	5	65	377
Nichols Sanitarium	Gen	Indiv	20	9	5	65	377
Stamford, 4,810—Jones	Gen	Part	50	24	10	256	1,533
Stamford Sanitarium	Gen	Part	50	24	10	256	1,533
Stephenville, 4,768—Erath	Gen	NPAssn	25	18	3	131	1,248
Stephenville Hospital	Gen	NPAssn	25	18	3	131	1,248

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Sugar Land, 1,840—Fort Bend	Gen	NPAssn	30	17	5	100	897
Laura Eldridge Hospital....	Gen	NPAssn	30	17	5	100	897
Sulphur Springs, 6,742—Hopkins	Gen	Indiv	14	15	4	50	400
Cozad Clinic and Hospital..	Gen	Indiv	14	15	4	50	400
Sweetwater, 10,367—Nolan	Gen	City	50	16	10	221	1,633
Sweetwater Hospital	Gen	City	50	16	10	221	1,633
Taylor, 7,875—Williamson	Gen	Corp	20	13	4	92	553
Stromberg Clinic and Hosp. Gen	Gen	Corp	30	15	5	93	835
Wedemeyer Hospital	Gen	Corp	30	15	5	93	835
Tengue, 3,157—Freestone	Gen	Indiv	20	4	3	79	233
Davidson Memorial Hospital Gen	Gen	Indiv	20	4	3	79	233
Temple, 15,344—Bell	Gen	Indiv	20	4	3	79	233
Gulf, Colorado and Santa Fe Hospital	Indus	NPAssn	78	36	..	..	1,635
Kings Daughters Hosp. *	Gen	NPAssn	110	101	8	131	3,194
Scott and White Hosp. *	Gen	Corp	204	115	6	135	4,031
Terrell, 10,481—Kaufman	Gen	Indiv	25	10	4	38	662
Alexander Hospital	Gen	Indiv	25	10	4	38	662
Holton-Johnston Clinic Hos- pital	Gen	Part	12	5	3	33	291
Lane Clinic Hospital	Gen	Indiv	10	..	..	..	Estab. 1941
Terrell State Hospital	Ment	State	2,674	2,684	..	..	359
Texarkana, 17,019—Bowie	Gen	State	2,674	2,684	..	..	359
Federal Correctional Insti- tution	Inst	Fed	15	6	..	..	140
Texarkana Hospital	Gen	NPAssn	60	34	8	214	1,430
Texas City, 5,748—Galveston	Gen	NPAssn	60	34	8	214	1,430
Danforth Clinic Hospital....	Gen	Indiv	8	..	3	Estab. 1941	1941
Tyler, 28,279—Smith	Gen	Part	15	14	4	96	1,073
Bryant Clinic and Sanit....	Gen	Part	15	14	4	96	1,073
Mother Frances Hospital	Gen	Church	62	37	18	319	1,666
Uvalde, 6,679—Uvalde	Gen	Indiv	8	6	4	50	375
Merritt Hospital	Gen	Indiv	8	6	4	50	375
Vernon, 9,277—Wilbarger	Gen	Church	25	6	3	60	407
Christ the King Hospital....	Gen	Church	25	6	3	60	407
Moore Brothers' Hospital....	Gen	Indiv	15	9	3	..	504
Vernon Sanitarium	Gen	Indiv	21	11	8	231	769
Victoria, 11,566—Victoria	Gen	Indiv	30	19	6	193	1,065
De Tar Memorial Hospital..	Gen	Indiv	30	19	6	193	1,065
Victoria Hospital	Gen	Corp	22	14	8	100	739
Waco, 55,982—McLennan	Gen	Corp	22	14	8	100	739
Hillcrest Memorial Hosp. A. Gen	Gen	Church	87	48	12	317	2,268
Joanna McClelland Memorial Hospital	Gen	Church	87	48	12	317	2,268
Providence Hospital	Gen	City	50	30	20	346	1,706
Veterans Admin. Facility	Ment	City	110	70	15	437	2,912
Waxahachie, 8,655—Ellis	Gen	Vet	1,122	1,106	..	..	663
Waxahachie Sanitarium	Gen	NPAssn	32	15	4	84	631
Weatherford, 5,924—Parker	Gen	NPAssn	32	15	4	84	631
Medical and Surgical Clinic. Gen	Gen	Part	10	6	4	114	447
Wellington, 3,308—Collingsworth	Gen	Part	10	6	4	114	447
St. Joseph's Hospital	Gen	Church	20	3	4	110	623
Wharton, 4,386—Wharton	Gen	Church	20	3	4	110	623
Caney Valley Hospital	Gen	Corp	25	10	8	130	920
Wheeler, 848—Wheeler	Gen	Corp	25	10	8	130	920
Wheeler Hospital	Gen	Part	14	4	3	130	459
Wichita Falls, 45,112—Wichita	Gen	Part	14	4	3	130	459
Bethania Hospital	Gen	Church	34	21	8	408	1,204
Wichita Falls Clinic-Hosp. *	Gen	Church	34	21	8	408	1,204
Wichita Falls State Hosp.	Ment	State	80	61	10	218	3,410
Wichita General Hospital	Gen	State	2,421	2,443	..	..	761
Yonkum, 4,733—Lavaca	Gen	CyCo	130	83	17	579	4,149
Huth Memorial Hospital	Gen	CyCo	130	83	17	579	4,149
Yorktown, 2,981—De Witt	Gen	Church	25	10	10	48	375
Allen Hospital	Gen	Indiv	12	3	3	6	160
Related Institutions							
Almeda, 300—Harris	Gen	Indiv	36	13	..	..	61
Kelchley Hospital	N&M	Indiv	36	13	..	..	61
Arlington, 4,240—Tarrant	Gen	NPAssn	25	13	..	..	130
Knights Templar Hospital..	Inst	NPAssn	25	13	..	..	130
Austin, 87,930—Travis	Gen	NPAssn	25	13	..	..	130
Austin State School	MeDe	State	1,925	1,840	..	..	222
Burk Burnett, 2,814—Wichita	Gen	State	1,925	1,840	..	..	222
Burk Burnett Clinic Hosp....	Gen	Part	4	2	4	65	97
Dallas, 294,734—Dallas	Gen	Part	4	2	4	65	97
Good Samaritan Hospital..	Gen	Part	30	10	15	516	626
Ennis, 7,057—Ellis	Gen	Part	30	10	15	516	626
Ennis Municipal Hospital	Gen	City	20	6	3	125	491
Fort Worth, 177,662—Tarrant	Gen	City	20	6	3	125	491
Elmwood Sanatorium	TB	CyCo	62	60	..	..	40
Howard Sanatorium	N&M	Indiv	16	12	..	..	53
Hallettsville, 1,581—Lavaca	Gen	Indiv	8	2	2	6	53
Dufner Hospital	Gen	Indiv	8	2	2	6	53
Houston, 381,514—Harris	Gen	Indiv	21	7	..	..	57
Houston Sanitarium	N&M	Indiv	21	7	..	..	57
Huntsville, 6,103—Walker	Gen	Indiv	21	7	..	..	57
Texas State Prison Hospital	Inst	State	161	114	..	..	2,329
Hutchins, 400—Dallas	Gen	State	161	114	..	..	2,329
City-County Convalescent Hospital	Conv	CyCo	175	173	..	..	63
McCamy, 2,595—Upton	Gen	CyCo	175	173	..	..	63
Cooper Hospital	Gen	Indiv	12	5	4	60	350
Mt. Vernon, 1,413—Franklin	Gen	Indiv	12	5	4	60	350
Crutcher Hospital	Gen	NPAssn	10	2	2	15	76
Nixon, 1,835—Gonzales	Gen	NPAssn	10	2	2	15	76
Crest View Hospital	Gen	Indiv	8	3	2	20	149

TEXAS—Continued						
Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births Admissions †
Poteet, 2,315—Atascosa						
Shotts Memorial Hospital..	Gen	Indiv	9	2	4	40 142
San Antonio, 253,854—Bexar						
Salvation Army Women's Home and Hospital.....	Mat	Church	35	6	18	88 124
Southton, 89—Bexar						
Bexar County Tuberculosis Colony	TB	County	75	70	..	.. 61
Texon, 1,200—Rengan						
Texon Hospital	Gen	NPAasn	10	2	3	11 118
Waco, 55,982—McLennan						
Waco State Home Hospital. Inst		State	30	15	..	.. 806

UTAH						
Hospitals and Sanatariums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births Admissions †
Amerjean Fork, 3,333—Utah American Fork Community Hospital	Gen	City	20	2	15	220 442
Bingham Canyon, 2,834—Salt Lake Bingham Canyon Hospital..	Gen	Indiv	40	19	6	58 545
Brigham, 5,641—Box Elder Cooley Memorial Hospital... Gen		NPAasn	25	14	12	225 830
Cedar City, 4,093—Iron Iron County Hospital..... Gen		County	43	23	12	230 1,023
Coalville, 949—Summit Summit County Hospital... Gen		County	12	6	7	54 261
Fort Douglas, 1,071—Salt Lake Station Hospital	Gen	Army	70	54	..	.. 894
Fort Duchesne, 104—Uintah Uintah and Ouray Agency Indian Hospital	Gen	IA	30	19	7	60 512
Heber, 2,748—Wasatch Heber Hospital	Gen	Part	14	7	5	68 250
Kanab, 1,303—Kane Kanab Hospital	Gen	Indiv	9	5	5	81 263
Lehi, 2,783—Utah Lehi Municipal Hospital.... Gen		City	15	5	10	92 210
Logan, 11,808—Caehe Cache Valley General Hosp. Gen		NPAasn	42	15	12	252 835
William Budge Memorial Hospital..	Gen	NPAasn	67	38	20	397 1,304
Moab, 1,084—Grand Grand County Public Hosp. Gen		County	10	10	7	79 304
Ogden, 43,688—Weber Thomas D. Dee Memorial Hospital*..	Gen	Church	214	150	36	1,450 5,460
Utah State Tuberculosis Sanatorium	TB	State	90	72	..	.. 102
Park City, 3,730—Summit Park City Miners' Hosp.... Gen		NPAasn	35	12	4	45 343
Payson, 3,591—Utah Payson City Hospital..... Gen		NPAasn	30	15	12	188 601
Price, 5,214—Carbon Price City Hospital..... Gen		City	56	41	12	231 1,165
Provo, 18,071—Utah Utah State Hospital..... Ment		State	1,106	1,067	..	.. 365
Utah Valley Hospital..	Gen	NPAasn	50	27	15	488 1,360
Richfield, 3,584—Sevier Sevier Valley Hospital..... Gen		Indiv	20	8	5	105 356
St. George, 2,434—Washington D. A. McGregor Hospital.... Gen		NPAasn	27	13	5	122 415
Salina, 1,616—Sevier Salinn Hospital	Gen	Indiv	17	6	0	57 242
Salt Lake City, 149,934—Salt Lake Dr. W. H. Groves Latter-Day Saints Hospital*..	Gen	Church	380	279	70	2,102 9,639
Holy Cross Hospital*..	Gen	Church	200	133	54	1,406 5,166
Primary Children's Hospital Chil		Church	25	19	..	.. 65
St. Mark's Hospital*..	Gen	Church	150	127	14	389 4,292
Salt Lake County General Hospital*..	Gen	County	237	138	21	532 4,036
Shriners Hospital for Crip-pled Childre		NPAssa	20	20	..	.. 70
Veterans Admin. Facility..	Gen	Vet	158	133	..	.. 1,160
Spanish Fork, 4,167—Utah Hughes Memorial Hospital.. Gen		Indiv	17	3	5	30 200
Tremonton, 1,443—Box Elder Valley Hospital	Gen	NPAasn	20	9	8	132 465

Related Institutions						
American Fork, 3,333—Utah Utah State Training School..	McDe	State	555	506	..	..
Murray, 5,740—Salt Lake Cottonwood State Maternity Hospital	Mat	Church	26	20	24	682 714
Barre, 10,909—Washington Barre City Hospital*..	Gen	NPAasn	60	50	15	322 2,043
Washington County Sanat..	TB	State	47	42	..	.. 64

VERMONT						
Hospitals and Sanatariums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births Admissions †
Bellevue Falls, 4,326—Windham Rockingham General Hosp.°	Gen	NPAasn	40	25	8	171 853
Bennington, 7,628—Bennington Henry W. Putnam Memorial Hospital..	Gen	NPAasn	96	66	25	266 1,746
Brattleboro, 9,622—Windham Brattleboro Memorial Hos-pital..	Gen	NPAasn	75	63	12	212 2,300
Brattleboro Retreat	Ment	NPAasn	800	767	..	.. 363
Burlington, 27,686—Chittenden Bishop DeGoesbriand Hos-pital*..	Gen	Church	125	96	15	381 2,653
Green Mountain Sanat.....	IntMed	Indiv	8	4	..	.. 106
Lakeview Sanatorium	N&M	Corp	25	7	..	.. 37
Mnry Fletcher Hospital*..	Gen	NPAasn	135	132	15	558 6,531
Fort Ethan Allen, 106—Chittenden Station Hospital	Gen	Army	131	77	2	10 1,215
Hardwick, 1,607—Caledonia Hardwick Hospital	Gen	NPAasn	12	6	4	20 161
Middlebury, 2,123—Addison Porter Memorial Hospital..	Gen	NPAasn	45	15	10	112 894
Montpelier, 8,006—Washington Henton Hospital*..	Gen	NPAasn	70	52	12	216 2,498
Morrisville, 1,967—Lamolle Copley Hospital	Gen	NPAasn	33	15	5	101 561
Newport, 4,902—Orleans Orleans County Memorial Hospital	Gen	NPAasn	30	23	6	136 775
Pittsford, 576—Rutland Vermont Sanatorium	TB	State	85	74	..	.. 123
Proctor, 2,184—Rutland Proctor Hospital	Gen	NPAasn	20	9	7	47 475
Randolph, 1,988—Orange Gifford Memorial Hospital*..	Gen	NPAasn	53	28	10	100 680
Rutland, 17,082—Rutland Rutland Hospital°	Gen	NPAasn	140	93	20	425 3,092
St. Albans, 8,037—Franklin St. Albans Hospital*..	Gen	NPAasn	50	40	8	175 1,614
St. Johnsbury, 7,437—Caledonia Brightlook Hospital*..	Gen	NPAasn	55	33	12	118 1,074
St. Johnsbury Hospital....	Gen	Church	30	12	5	58 454
Springfield, 5,182—Windsor Springfield Hospital*..	Gen	NPAasn	60	35	15	232 1,211
Waterbury, 3,074—Washington Vermont State Hospital for the Insane	Ment	State	1,080	1,059	..	.. 310
White River Junction, 2,271—Windsor Veterans Admin. Facility*..	Gen	Vet	183	123	..	.. 1,183
Windsor, 3,402—Windsor Windsor Hospital	Gen	NPAasn	20	11	6	87 334
Winooski, 6,086—Chittenden Fanny Allen Hospital*..	Gen	Church	75	63	14	180 1,201

Related Institutions						
Brandon, 2,979—Rutland Brandon State School.....	McDe	State	398	377	..	.. 33
Pittsford, 576—Rutland Caverly Preventorium	TB	NPAasn	77	68	..	.. 140
Windsor, 3,402—Windsor Vermont State Prison Hosp. Inst		State	12	5	..	.. 123

VIRGINIA						
Hospitals and Sanatariums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births Admissions †
..	Gen	NPAasn	60	37	6	47 1,113
..	Gen	NPAasn	104	87	29	737 3,451
..	Gen	Corp	21	14	6	18 255
Bristol, 9,768—Washington King's Mountain Memorial Hospital..	Gen	NPAasn	49	37	8	323 2,221
Brook Hill, 50—Henrico Pine Camp Hospital.....	TB	City	286	210	..	.. 175
Burkeville, 658—Nottoway Piedmont Sanatorium° ..	TB	State	269	192	..	.. 423
..	..	State	400	379	..	.. 529
..	..	State	370	352	..	.. 462
Martha Jefferson Hospital and Sanitarium*	Gen	NPAasn	50	36	10	220 1,476
University of Virginia Hos-pital*..	Gen	State	525	269	46	954 11,113
..	Corp	..	26	16	8	126 1,254
..	Gen	NPAasn	133	109	8	1,103 3,570
Clintwood, 1,106—Dickenson Dickinson County Hospital. Gen		Indiv	20	12	8	157 506
Coeburn, 764—Wise Coeburn Hospital	Gen	Part	25	14	3	32 1,211

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Danville, 32,749—Pittsylvania	Gen	Indiv	15	12	4	36	442
Hilltop Sanatorium	TB	NPAasn	25	16	2	15	620
Memorial Hospital	Gen	NPAasn	50	40	..	..	75
Farmville, 3,475—Prince Edward	Gen	NPAasn	170	101	24	561	5,610
Southside Community Hos- pital	Gen	NPAasn	46	42	10	105	1,700
Fort Myer, 1,050—Arlington	Gen	Army	50	31	..	..	1,177
Station Hospital	Gen	Army	136	67	4	43	2,103
Franklin, 3,466—Southampton	Gen	Army	139	61	..	..	1,030
Rafford Hospital	Gen	Indiv	35	20	6	105	1,099
Fredericksburg, 10,066—Spotsylvania	Gen	NPAasn	75	87	10	431	3,192
Mary Washington Hospital	Gen	NPAasn	25	8	4	28	331
Front Royal, 3,831—Warren	Gen	Corp	25	8	4	28	331
Grundy, 1,476—Buchanan	Gen	Indiv	50	44	6	65	2,148
Grundy Hospital	Gen	Indiv	50	44	6	65	2,148
Hampton, 5,898—Elizabeth City	Gen	NPAasn	91	62	12	309	2,558
Dixie Hospital	Gen	NPAasn	91	62	12	309	2,558
Harrisonburg, 8,768—Rockingham	Gen	NPAasn	141	114	11	438	4,851
Rockingham Memorial Hos- pital	Gen	NPAasn	141	114	11	438	4,851
Hopewell, 8,679—Prince George	Gen	Corp	20	9	6	116	452
John Randolph Hospital	Gen	Corp	20	9	6	116	452
Hot Springs, 1,500—Bath	Gen	NPAasn	14	5	4	22	197
Community House	Gen	NPAasn	14	5	4	22	197
Kecoughtan, 1,900—Elizabeth City	Gen	Vet	534	399	..	..	3,539
Veterans Admin. Facility	Gen	Vet	534	399	..	..	3,539
Langley Field, —Elizabeth City	Gen	Army	125	61	5	99	2,090
Station Hospital	Gen	Army	125	61	5	99	2,090
Lebanon, 622—Russell	Gen	Part	18	6	5	40	399
Lebanon General Hospital	Gen	Part	18	6	5	40	399
Leesburg, 1,698—Loudoun	Gen	County	28	17	6	99	686
Loudoun County Hospital	Gen	County	28	17	6	99	686
Lexington, 3,914—Rockbridge	Gen	NPAasn	57	28	8	92	1,492
Stonewall Jackson Memorial Hospital	Gen	NPAasn	57	28	8	92	1,492
Lorton, 60—Fairfax	Gen	See Washington, D. C.	..	..	..	..	..
District of Columbia Reforma- tory	Gen	See Washington, D. C.	..	..	..	..	..
Luray, 1,511—Page	Gen	NPAasn	18	7	7	48	650
Page Memorial Hospital	Gen	NPAasn	18	7	7	48	650
Lynchburg, 44,541—Campbell	Gen	Unit of Marshall Lodge Memorial Hosp.	149	117	28	529	4,041
Guggenheimer Memorial Hos- pital	Gen	Unit of Marshall Lodge Memorial Hosp.	149	117	28	529	4,041
Lynchburg General Hosp.	Gen	City	93	80	12	239	2,999
Marshall Lodge Memorial Hospital	Gen	Church	100	46	22	281	1,732
Virginia Baptist Hospital	Gen	Church	100	46	22	281	1,732
Lynnhaven, 250—Princess Anne	Gen	NPAasn	50	45	..	..	67
Tidewater Memorial Hosp.	Gen	NPAasn	50	45	..	..	67
Marion, 5,177—Smyth	Gen	Indiv	14	9	3	44	502
Homeland Hospital	Gen	Indiv	14	9	3	44	502
Lee Memorial Hospital	Gen	NPAasn	30	20	4	38	927
Southwestern State Hosp.	Gen	State	1,347	1,250	..	..	389
Martinsville, 10,080—Henry	Gen	Indiv	53	30	12	132	1,701
Shenandoah Hospital	Gen	Indiv	53	30	12	132	1,701
Nassawadox, 1,000—Northampton	Gen	Counties	52	21	7	72	1,213
Northampton-Accomac Me- morial Hospital	Gen	Counties	52	21	7	72	1,213
Newport News, 37,067—Warwick	Gen	Indiv	90	83	18	509	3,605
Elizabeth Buxton Hosp.	Gen	Indiv	90	83	18	509	3,605
Riverside Hospital	Gen	NPAasn	100	85	16	561	3,574
Whittaker Memorial Hosp.	Gen	NPAasn	44	18	6	76	1,118
Norfolk, 144,332—Norfolk	Gen	City	145	112	..	..	115
Charles R. Grandy Sanat.	TB	City	145	112	..	..	115
Henry A. Wise Memorial Hospital	Gen	City	20	8	..	..	148
Hospital of St. Vincent de Paul	Gen	Church	225	154	25	714	7,076
Leigh Memorial Hospital	Gen	NPAasn	72	37	22	262	1,634
McCoy-Stokes Hospital	Gen	Part	11	4	..	..	433
Norfolk Community Hosp.	Gen	NPAasn	54	39	16	195	1,298
Norfolk General Hosp.	Gen	NPAasn	278	210	55	1,105	9,539
U. S. Marine Hospital	Gen	USPHS	360	274	..	..	3,869
Norton, 4,006—Wise	Gen	Indiv	30	15	6	48	717
Norton General Hospital	Gen	Indiv	30	15	6	48	717
Pearlington Gap, 1,990—Lee	Gen	Corp	32	23	2	33	1,084
Lee General Hospital	Gen	Corp	32	23	2	33	1,084
Petersburg, 30,631—Dinwiddie	Gen	State	3,521	3,730	..	..	913
Central State Hospital	Gen	State	3,521	3,730	..	..	913
Medical Center Hospital	Gen	Unit of Central State Hospital	72	71	7	245	2,821
Petersburg Hospital	Gen	NPAasn	72	71	7	245	2,821
Petersburg State Colony	Gen	State	300	235	..	..	114
Portsmouth, 50,745—Norfolk	Gen	NPAasn	100	98	16	449	3,873
Kings Daughters Hospital	Gen	NPAasn	100	98	16	449	3,873
Norfolk Naval Hospital	Gen	Navy	1,069	639	21	426	9,227
Parrish Memorial Hospital	Gen	Corp	54	31	16	189	1,669
Pulaski, 8,792—Pulaski	Gen	Corp	70	49	10	189	2,209
Pulaski Hospital	Gen	Corp	70	49	10	189	2,209
Radford, 6,990—Montgomery	Gen	NPAasn	33	..	5	Estab. 1941	..
Radford Community Hosp.	Gen	Indiv	46	41	..	..	375
St. ..	Gen	Corp	101	66	10	175	2,635
Riel C M	Gen	Indiv	75	61	8	79	1,959

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Richmond, 193,042—Henrico	Gen	NPAasn	120	99	..	..	261
Crippled Children's Hosp.	Ortb	Unit of Med. Col. of Va.	..	..	..	..	..
Dooley Hospital	Gen	Corp	85	73	20	469	3,890
Grace Hospital	Gen	Corp	122	109	22	556	5,371
Johnston-Willis Hospital	Gen	Corp	122	109	22	556	5,371
Medical College of Virginia, Hospital Division	Gen	State	881	428	94	1,040	11,633
Memorial Hospital	Gen	Unit of Med. Col. of Va.	..	..	..	..	..
Penitentiary Hospital	Gen	State	50	33	..	..	1,005
Retreat for the Sick	Gen	NPAasn	90	72	10	503	3,371
Richmond Community Hosp.	Gen	NPAasn	30	17	4	66	431
St. Elizabeth's Hospital	Gen	Corp	50	46	..	..	1,005
St. Luke's Hospital	Gen	Corp	85	66	20	305	2,670
St. Philip Hospital	Gen	Unit of Med. Col. of Va.	..	..	..	..	..
Sheltering Arms Hospital	Gen	NPAasn	78	51	17	170	1,342
Stuart Circle Hospital	Gen	Corp	94	85	18	397	3,187
Tucker Hospital	Gen	N&M	60	26	..	..	476
Westbrook Sanatorium	Gen	Corp	135	88	..	..	303
Roanoke, 69,287—Roanoke	Gen	NPAasn	44	21	5	93	750
Burrell Memorial Hosp.	Gen	NPAasn	44	21	5	93	750
Gill Memorial Eye, Ear and Throat Hospital	Gen	ENT	25	6	..	..	1,095
Jefferson Hospital	Gen	NPAasn	102	79	13	472	3,097
Lewis-Gale Hospital	Gen	NPAasn	122	92	12	282	4,639
Roanoke City Tubercular Sanatorium	Gen	City	60	40	..	..	53
Roanoke Hospital	Gen	NPAasn	97	66	14	483	3,051
Shenandoah Hospital	Gen	Corp	50	28	8	258	1,931
Veterans Admin. Facility	Gen	Vet	1,195	1,063	..	..	797
Saltville, 2,650—Smyth	Gen	NPAasn	16	5	5	26	373
Mntheson Hospital	Gen	NPAasn	16	5	5	26	373
South Boston, 5,252—Hnifax	Gen	Corp	25	12	6	37	443
Halevon Hospital	Gen	Corp	25	12	6	37	443
South Boston Hospital	Gen	Indiv	34	15	8	66	721
Staunton, 13,337—Augusta	Gen	Unit of Western State Hospital	..	..	..	..	..
DeJennette Sanatorium	Gen	Unit of Western State Hospital	..	..	..	..	..
Kings Daughters Hospital	Gen	NPAasn	78	45	10	249	1,633
Western State Hospital	Gen	State	2,459	2,458	..	..	1,086
Stonera, 1,650—Wise	Gen	Indus	15	5	..	..	152
Stonera Hospital	Gen	Indus	15	5	..	..	152
Stuart, 720—Patrick	Gen	Indiv	20	7	4	35	236
Stuart Hospital	Gen	Indiv	20	7	4	35	236
Suffolk, 11,343—Nansemond	Gen	Corp	65	36	8	131	1,884
Lakeview Hospital	Gen	Corp	65	36	8	131	1,884
Virginia General Hospital	Gen	NPAasn	25	8	5	40	344
University, —Albemarle	Gen	See Charlottesville, Virginia	..	..	..	..	..
University of Virginia Hosp.	Gen	See Charlottesville, Virginia	..	..	..	..	..
Waynesboro, 7,373—Augusta	Gen	NPAasn	35	15	6	138	659
Waynesboro Community Hospital	Gen	NPAasn	35	15	6	138	659
Williamsburg, 3,942—James City	Gen	Indiv	17	10	3	49	498
Bell Hospital	Gen	Indiv	17	10	3	49	498
Eastern State Hospital	Gen	State	1,793	1,790	..	..	529
Winchester, 12,065—Frederick	Gen	NPAasn	125	97	19	461	3,373
Winchester Memorial Hos- pital	Gen	NPAasn	125	97	19	461	3,373
Woodstock, 1,546—Shenandoah	Gen	Indiv	32	17	6	83	686
Cora Miller Memorial Hosp.	Gen	Indiv	32	17	6	83	686
Related Institutions							
Beaumont, —Powhatan	Gen	State	21	6	..	..	275
Virginia Industrial School for Boys	Gen	State	21	6	..	..	275
Colony, 100—Amherst	Gen	State	1,673	1,660	..	..	323
Lynchburg State Colony	Gen	State	1,673	1,660	..	..	323
Medical Center Hospital	Gen	Unit of Lynchburg State Colony	..	..	..	..	..
Falls Church, 2,576—Fairfax	Gen	Indiv	80	63	..	..	8
Gundry Home and Training School for Feeble-minded	Gen	McDe	80	63	..	..	8
Lawrenceville, 1,703—Brunswick	Gen	Inst	18	2	..	..	200
Louise Tylor Letcher Me- morial Hospital	Gen	Inst	18	2	..	..	200
Martinsville, 10,080—Henry	Gen	Indiv	14	8	2	42	365
St. Mary Hospital	Gen	Indiv	14	8	2	42	365
Richmond, 193,042—Henrico	Gen	City	509	403	65	86	1,039
City Home	Gen	City	509	403	65	86	1,039
City Tuberculosis Sanatorium	Gen	Unit of City Home	..	..	..	..	..
State Farm, 60—Goochland	Gen	State	60	61	..	..	410
State Farm Hospital	Gen	State	60	61	..	..	410
Sweet Briar, 200—Amherst	Gen	Inst	20	3	..	..	206
Sweet Briar College In- firmery	Gen	Inst	20	3	..	..	206
WASHINGTON							
Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Aberdeen, 18,846—Grays Harbor	Gen	Church	78	74	24	566	3,499
St. Joseph's Hospital	Gen	Church	78	74	24	566	3,499
American Lake, 800—Pierce	Gen	Vet	710	707	..	..	401
Veterans Admin. Facility	Gen	Vet	710	707	..	..	401
Anacortes, 5,875—Skagit	Gen	Corp	24	10	5	92	621
Anacortes Hospital	Gen	Corp	24	10	5	92	621
Auburn, 4,211—King	Gen	Corp	40	18	10	143	759
Suburban Hospital	Gen	Corp	40	18	10	143	759
Bellingham, 29,413—Whatcom	Gen	Indiv	17	14	4	65	249
St. Frances Hospital	Gen	Indiv	17	14	4	65	249

Key to symbols and abbreviations is on page 1071

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †	
St. Joseph's Hospital*..... Gen		Church	95	68	15	394	2,143	
St. Luke's General Hosp.*..... Gen		NPAasn	70	53	12	329	2,257	
Whateam County Hospital, Gen		County	76	63	6	109	1,007	
Bremerton, 15,134—Kitsap								
U. S. Naval Hospital*..... Gen		Navy	308	157	8	96	2,858	
Centralia, 7,414—Lewis								
St. Luke's Hospital and Sweet Clinic..... Gen		Part	30	14	10	154	718	
Chehalis, 4,857—Lewis								
St. Helen's Hospital..... Gen		Church	23	19	8	170	880	
Chevelah, 1,565—Stevens								
St. Joseph's Hospital..... Gen		Church	22	15	6	130	542	
Colfax, 2,853—Whitman								
St. Ignatius Hospital*..... Gen		Church	60	35	10	149	1,369	
Colville, 2,418—Stevens								
Mt. Carmel Hospital..... Gen		Church	30	20	6	108	1,045	
Dayton, 3,026—Columbia								
John Brining Memorial Hospital..... Gen		Indiv	20	15	4	70	503	
Ellensburg, 5,944—Kittitas								
Ellensburg General Hosp.*..... Gen		Corp	25	14	8	125	664	
Valley General Hospital..... Gen		Indiv	14	8	6	103	378	
Elma, 1,370—Grays Harbor								
Elma General Hospital..... Gen		Indiv	16	9	6	123	413	
Oakhurst Sanatorium*..... TB		County	69	70	...	...	64
Everett, 30,224—Snohomish								
General Hospital*..... Gen		NPAasn	83	75	19	494	2,841	
Providence Hospital*..... Gen		Church	130	72	21	497	2,745	
Forks, —Clallam								
Olympic Hospital..... Gen		Indiv	28	9	3	22	467	
Fort Lewis, —Pierce								
Station Hospital*..... Gen		Army	432	131	8	118	3,208	
Fort Steilacoom, 2,060—Pierce								
Western State Hospital*+..... Ment		State	2,055	2,683	..	...	741
Fort Worden (Port Townsend P.O.), 387—Jefferson								
Station Hospital..... Gen		Army	47	12	2	10	171	
Kirkland, 2,054—King								
Kirkland Hospital..... Gen		Indiv	12	7	6	132	347	
Lakeview, 300—Pierce								
Mountain View Sanatorium. TB		County	135	130	..	...	215
Leavenworth, 1,005—Chelan								
Cascade Sanitarium..... Gen		NPAasn	35	22	6	96	1,006	
Longview, 12,385—Cowlitz								
Cowlitz General Hospital.... Gen		NPAasn	58	30	13	332	1,601	
Longview Memorial Hospital Gen		Corp	50	37	12	314	1,863	
Mason City, 3,000—Okanogan								
Mason City Hospital..... Gen		Corp	50	17	12	215	948	
Medial Lake, 2,114—Spokane								
Eastern State Hospital*+..... Ment		State	2,037	1,903	..	...	443
Monroe, 1,590—Snohomish								
Snohomish County Hospital and Farm..... Gen		County	72	55	5	57	821	
Mt. Vernon, 3,278—Skagit								
Mt. Vernon General Hospital Gen		Indiv	25	14	5	01	508	
Rowley General Hospital.... Gen		Indiv	40	21	7	153	832	
		IA	40	21	5	60	473	
		Gen	NPAasn	20	12	8	78	465
Olympia, 13,254—Thurston								
St. Peter's Hospital*..... Gen		Church	100	80	15	345	2,585	
Paseo, 3,913—Franklin								
Our Lady of Lourdes Hospital*..... Gen		Church	60	31	7	263	1,291	
Port Angeles, 9,409—Clallam								
Davidson and Hay Hospital Gen		Indiv	50	23	10	144	1,104	
Port Angeles General Hospital*..... Gen		NPAasn	94	53	12	186	1,710	
Port Angeles 500—Kitsap								
		Gen	Indiv	15	6	4	56	290
		Gen	Church	130	39	12	162	1,162
		N&M	Indiv	26	12	75
		Gen	Part	24	12	8	150	709
Renton, 4,485—King								
Bronson Memorial Hospital Gen		Indiv	33	10	6	103	570	
Richmond Highlands, 600—King								
Frland Sanatorium and Isolation Hospital*..... TB		City	230	225	..	...	151
		City	70	8	..	...	125
Seattle, 363,302—King								
Ballard General Hospital.... Gen		NPAasn	30	21	12	33	950	
Children's Orthopedic Hospital*..... Gen		Orth	124	109	..	...	1,264
Childen's Hospital*..... Surg		Indiv	20	10	..	...	1,928
Cobb Hospital..... Gen		Church	200	110	39	769	4,569	
		See Richmond Highlands, Wash.						
		N&M	Corp	24	16	35
King County Hospital, Unit No. 1 (Harborview)*+..... Gen		County	454	406	51	695	13,204	
King County Hospital, Unit No. 2 (Georgetown)..... Chr		County	267	248	..	...	925
King County Tuberculosis Hospital*..... TB		County	165	156	..	...	279
Laurel Beach Sanatorium.... TB		Part	90	84	..	...	169
Maynard Hospital*..... Gen		NPAasn	93	70	35	797	2,825	
Meadows Sanatorium..... N&M		Corp	35	23	..	...	169
Medial and Dental Building Surgery..... Surg		Indiv	20	10	..	...	2,077
Providence Hospital*..... Gen		Church	380	288	63	1,451	11,607	
Riverton Hospital for Chest Diseases..... TB		NPAasn	53	53	..	...	115

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassnets	Number of Births	Admissions †	
Seattle General Hospital*+..... Gen		NPAasn	110	92	25	672	4,891	
Station Hospital..... Gen		Army	20	..	..	..	175
Swedish Hospital*+..... Gen		NPAasn	270	237	74	1,484	7,907	
U. S. Marine Hospital*+..... Gen		USPHS	400	333	..	11	3,477	
University of Washington Health Center..... Inst		State	75	22	..	..	1,612
Virginia Mason Hosp.*+..... Gen		NPAasn	160	134	33	678	3,512	
Sedro Wooley, 2,954—Skagit..... Gen								
Memorial Hospital..... Gen		NPAasn	35	16	7	157	798	
Northern State Hospital*+..... Ment		State	2,053	2,050	..	..	596
Shelton, 3,707—Mason..... Gen								
Shelton General Hospital*+..... Gen		NPAasn	47	30	12	210	..	
Snohomish, 2,794—Snohomish..... TB		County	59	58	..	..	36
Aldercrest Sanatorium..... Gen		Indiv	16	9	6	102	414	
Snohomish General Hospital..... Gen								
Snoqualmie Falls, —King..... Gen		Indiv	25	No data supplied				
Snoqualmie Falls Hospital..... Gen								
Soap Lake, 622—Grant..... Gen								
McKay Memorial Research Hospital..... Gen		State	24	12	..	..	172
South Bend, 1,771—Pacific..... Gen		Part	20	6	0	68	237	
South Bend General Hosp... Gen								
Spokane, 122,001—Spokane..... Gen								
Deaconess Hospital*+..... Gen		Church	187	136	36	618	5,717	
Edgecliff Sanatorium*..... TB		State	145	103	..	..	127
Sacred Heart Hospital*+..... Gen		Church	300	270	46	1,239	10,150	
St. Luke's Hospital*+..... Gen		NPAasn	190	107	26	444	3,541	
Salvation Army Women's Hospital and Home..... Mat		Church	42	26	25	87	112	
Shriners Hospital for Crippled Children*..... Orth		NPAasn	24	20	..	..	133
Station Hospital*+..... Gen		Army	56	43	..	5	883	
Stanwood, 600—Snohomish..... Gen								
Stanwood General Hospital..... Gen		Indiv	14	6	3	34	197	
Stellacoom, 832—Pierce..... Gen								
U. S. Penitentiary Hospital* Inst		USPHS	85	69	..	..	714
Tacoma, 109,408—Pierce..... Gen								
Northern Pacific Beneficial Association Hospital*+..... Gen		NPAasn	111	68	9	69	2,822	
Pierce County Hospital*+..... Gen		County	168	132	22	345	3,750	
St. Joseph's Hospital*+..... Gen		Church	270	115	30	961	5,483	
Tacoma General Hosp.*+..... Gen		NPAasn	185	171	50	1,484	7,021	
Tacoma Indian Hospital*+..... TB		IA	146	143	..	..	265
		IA	40	30	..	..	607
Toppenish, 3,683—Yakima..... TB		IA	37	31	..	..	86
Yakima Sanatorium..... TB								
Vancouver, 16,768—Clark..... Gen		County	40	No data supplied				
Clark County Hospital..... Gen		NPAasn	46	27	12	218	1,257	
Clark General Hospital..... Gen		Church	64	69	20	468	2,765	
St. Joseph's Hospital*+..... Gen		Army	132	68	4	37	1,563	
Station Hospital*+..... Gen								
Walla Walla General Hosp.*+..... Gen		Church	85	62	15	312	2,472	
St. Mary's Hospital*+..... Gen		Vet	293	236	..	..	3,409
Veterans Hospital*+..... Gen		Vet	127	123	..	..	260
Walla Walla General Hosp.*+..... Gen		Church	60	31	9	191	1,141	
Wenatchee, 11,620—Chelan..... Gen								
Central Washington Deaconess Hospital*+..... Gen		Church	50	47	14	282	2,262	
St. Anthony's Hospital*+..... Gen		Church	64	40	17	331	1,410	
Yakima, 27,221—Yakima..... Gen								
St. Elizabeth's Hospital*+..... Gen		Church	164	155	30	1,051	5,152	
Yakima County Hospital.... Gen		County	145	79	13	184	1,607	
Related Institutions								
Chehalis, 4,837—Lewis..... Inst		State	26	2	..	..	350
State Training School for..... Gen		NPAasn	23	15	..	11	613	
		Indiv	10	5	4	18	450	
School..... McDe		State	1,400	1,400	..	..	37
Roslyn, 1,743—Kittitas..... See Cle Elum Beneficial Company Hospital.....								
Roslyn Cle Elum Beneficial Company Hospital.....								
Seattle, 363,302—King..... Mnt		NPAasn	25	25	16	72	79	
Florence Crittenton Home... Conv		Part	11	6	..	..	131
Frederick's Sanitarium..... Chh		NPAasn	20	No data supplied				
Junior League Convalescent Home..... Alcoh		Corp	20	14	..	..	37
Shadel Sanitarium..... Alcoh								
Spokane, 122,001—Spokane..... Mat		NPAasn	14	7	10	23	26	
Florence Crittenton Home.. Iso		City	75	6	..	..	121
Rivercrest Hospital..... Iso								
Tacoma, 109,408—Pierce..... Mat		NPAasn	14	11	..	..	2,118
Washington Minor Hospital Gen		NPAasn	20	9	10	42	50	
White Shield Home..... Mat		NPAasn						
Tulalip, 100—Snohomish..... Gen		IA	9	9	3	77	213	
Tulalip Hospital..... Gen								
Walla Walla, 15,102—Walla Walla..... TB		County	40	20	..	..	229
Blue Mountain Sanatorium. TB								
Blue Mountain Sanatorium. TB		Inst	State	63	54	379
		1.. Gen	Indiv	17	11	8	102	276
Yakima, 1,743—Kittitas..... TB		Indiv	23	22	..	..	22
Dopps Sanatorium..... TB								

Key to symbols and abbreviations is on page 1071

WEST VIRGINIA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Beekley, 12,852—Raleigh	Gen	Part	160	127	15	179	5,499
Beekley Hospital	Gen	State	454	450			434
Pinerest Sanitarium	TB	State	70	60	7	81	2,062
Raleigh General Hospital	Gen	Corp					
Bluefield, 20,641—Mercer	Gen	Corp	110	98	10	218	4,555
Bluefield Sanitarium	Gen	Indiv	25	14	3	18	467
Providence Hospital	Gen	Corp	75	60	8	115	2,177
St Luke's Hospital	Gen	Indiv	45	15	2	12	700
St Mary's Hospital	Gen	Chureb	44	20	6	110	634
Buckhannon, 4,450—Upshur	Gen	NPAssn	300	241	23	706	10,327
St Joseph's Hospital	Gen	Corp	148	116	16	265	3,944
Charleston, 67,914—Kanawha	Gen	Cnpr	88	60	12	264	2,901
Charleston General Hosp	Gen	NPAssn	77	71	12	258	3,711
Kanawha Valley Hosp	Gen	Chureh	100	83	25	461	3,021
McMillan Hospital	Gen	Chureh	28	11	8	118	588
Mountain State Memorial Hospital	Gen	Corp	51	37	3	78	1,604
St Francis Hospital	Gen	NPAssn	25	12	6	71	447
Salvation Army Hospital	Gen	Chureh	177	104	15	297	3,689
Staats Hospital	Gen	NPAssn	52	38	10	286	1,669
Charles Town, 2,926—Jefferson	Gen	State	100	141			133
Charles Town General Hosp	Gen	Corp	35	14	4	33	533
Clarkburg, 30,579—Harrison	Gen	NPAssn	172	104	15	297	3,689
St Mary's Hospital	Gen	Chureh	57	38	10	286	1,669
Union Protestant Hosp	Gen	NPAssn	100	141			133
Denmar, 100—Pocahontas	TB	State	100	141			133
Denmar Sanatorium	TB	State	100	141			133
East Ralnelie, 1,535—Greenbrier	Gen	Corp	35	14	4	33	533
East Ralnelie General Hosp	Gen	Corp	35	14	4	33	533
Elkins, 8,133—Randolph	Gen	NPAssn	108	57	11	49	2,383
Davis Memorial Hospital	Gen	Corp	66	30	6	64	1,067
Elkins City Hospital	Gen	Corp	66	30	6	64	1,067
Fairmont, 23,105—Marion	Gen	State	68	49	5	62	1,226
Fairmont Emergency Hos	Gen	NPAssn	145	90	18	422	3,508
Fairmont General Hosp	Gen	NPAssn	145	90	18	422	3,508
Glen Dale, 1,448—Marshall	Gen	Chureh	90	34	10	201	1,253
Reynolds Memorial Hosp	Gen	Chureh	90	34	10	201	1,253
Hinton, 5,815—Summers	Gen	Corp	67	40	4	44	1,564
Hinton Hospital	Gen	Corp	67	40	4	44	1,564
Holden, 4,000—Logan	Gen	Corp	24	12			564
Holden Hospital	Gen	Corp	24	12			564
Hopemont, 300—Preston	Unit of Hopemont Sanitarium						
Conley Hospital	TB	State	473	475			470
Hopemont Sanitarium	TB	State	473	475			470
Huntington, 78,836—Cabell	Gen	NPAssn	110	95	20	64	2,823
Chesapeake and Ohio Hos	Gen	NPAssn	130	80	22	220	2,930
Huntington Memorial Hos	Gen	NPAssn	130	80	22	220	2,930
Huntington Orthopedic Hos	Orth	NPAssn	50	39			417
Huntington State Hospital	Ment	State	935	948			402
Moore Beekner Eye, Ear and	ENT	Part	5	2			550
Throat Hospital	Gen	Chureh	220	168	30	1,092	5,977
St Mary's Hospital	Gen	Vet	317	251			2,702
Veterans Admin Facility	Gen	Corp	60	34	8	146	1,293
Keyser, 6,177—Mineral	Gen	Corp	10	8	4	32	417
Potomac Valley Hospital	Gen	Corp	10	8	4	32	417
Kingwood 1676—Preston	Gen	Corp	10	8	4	32	417
Kerecheval Memorial Clinie	Gen	Corp	10	8	4	32	417
Lakin, 50—Mason	Ment	State	400	384			95
Lakin State Hospital	Ment	State	400	384			95
Logan, 5,166—Logan	Gen	Corp	100	42	8	89	2,421
Logan General Hospital	Gen	Corp	75	42	6	30	1,597
Mercy Hospital	Gen	Corp	75	42	6	30	1,597
Marlington, 1,644—Pocahontas	Gen	County	40	10	4	36	450
Pocahontas Memorial Hosp	Gen	County	40	10	4	36	450
Martinsburg, 15,003—Berkeley	Gen	NPAssn	62	28	10	70	1,051
City Hospital	Gen	NPAssn	94	53	8	195	1,789
Kings Daughters Hospital	Gen	NPAssn	94	53	8	195	1,789
Matawan, 905—Milago	Gen	Corp	42	16	1	20	1,164
Matawan Chale Hospital	Gen	Corp	42	16	1	20	1,164
Milton, 1,641—Cabell	Conv	City	65	60			134
Morris Memorial Hospital for	Conv	City	65	60			134
Crippled Children	Conv	City	65	60			134
Montgomery, 3,231—Fayette	Gen	Corp	127	91	8	114	4,447
Laird Memorial Hospital	Gen	Corp	127	91	8	114	4,447
Morgantown, 16,635—Monongalia	Gen	Indiv	68	51	12	175	2,188
City Hospital	Gen	County	100	71	15	252	2,020
Monongalia General Hosp	Gen	County	100	71	15	252	2,020
Mullens, 3,026—Wyonniag	Gen	Indiv	40	12	2	20	367
Wylie Hospital	Gen	Indiv	40	12	2	20	367
New Martinsville, 3,491—Wetzel	Gen	NPAssn	30	23	5	76	924
Wetzel County Hospital	Gen	NPAssn	30	23	5	76	924
Oak Hill, 2,218—Fayette	Gen	Part	75	44	7	66	1,377
Oak Hill Hospital	Gen	Part	75	44	7	66	1,377
Parkersburg, 30,103—Wnod	Gen	City	165	80	18	363	3,342
Camden Clark Memorial	Gen	Chureh	125	91	14	278	2,836
Hospital	Gen	Chureh	125	91	14	278	2,836
St Joseph's Hospital	Gen	Indiv	15	9	6	68	447
Parsons, 2,077—Tucker	Gen	Indiv	15	9	6	68	447
Tucker County Hospital	Gen	Part	35	23	6	55	1,101
Philippi, 1,935—Barbour	Gen	Corp	40	24	10	60	1,133
Myers Clinie Hospital	Gen	Corp	40	24	10	60	1,133
Princeton, 7,426—Mercer	Gen	Indiv	10	5	4	15	198
Mercer Memorial Hospital	Gen	Indiv	10	5	4	15	198
Ravenswood, 1,061—Jackson	Gen	Indiv	10	5	4	15	198
Ravenswood Hospital	Gen	Indiv	10	5	4	15	198

WEST VIRGINIA—Continued

Hospitals and Saaatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Richwood, 5,051—Nicholas	Gen	Indiv	50	10	6	24	390
McClung Hospital	Gen	Church	35	15	6	43	850
Sacred Heart Hospital	Gen	Church	35	15	6	43	850
Ronceverte, 2,665—Greenbrier	Gen	Corp	50	23	3	35	1,348
Greenbrier Valley Hosp	Gen	Corp	50	23	3	35	1,348
Sistersville, 2,702—Tyler	Gen	NPAssn	20	No data supplied			
Sistersville General Hospital	Gen	NPAssn	20	No data supplied			
South Charleston, 10,377—Kanawha	Gen	Indiv	30	16	12	77	688
Dunn Hospital	Gen	Indiv	30	16	12	77	688
Spencer, 2,497—Roane	Gen	Indiv	20	12	6	39	621
De Puc Hospital	Gen	State	947	981			385
Spencer State Hospital	Gen	State	947	981			385
Tradelphia, 359—Ohio	TB	County	38	38			17
Ohin County Tuberculosis Sanatorium	TB	County	38	38			17
Welch, 6,264—McDowell	Gen	Corp	135	95	6	80	2,570
Graec Hospital	Gen	Corp	139	102	10	159	5,081
Stevens Clinie Hospital	Gen	State	89	41	4	37	3,809
Welch Emergency Hospital	Gen	State	89	41	4	37	3,809
Weston, 8,268—Lewis	Gen	Indiv	44	28	5	62	1,016
General Hospital	Gen	Corp	30	13	7	38	612
Weston City Hospital	Gen	Corp	30	13	7	38	612
Weston State Hospital	Gen	State	1,744	1,728			550
Wheeling, 61,089—Ohio	Gen	NPAssn	280	250	28	1,033	7,131
Ohio Valley General Hos	Gen	NPAssn	280	250	28	1,033	7,131
Wheeling Hospital	Gen	Chureh	180	110	20	707	4,013
Williamsn, 8,366—Mingo	Gen	Corp	100	60	6	174	3,688
Williamsn Memorial Hosp	Gen	Corp	100	60	6	174	3,688
Related Institutions							
Berkeley Springs, 1,145—Morgan	Orth	NPAssn	40	28			49
'The Pines' West Virginia Foundation for Crippled Children	Orth	NPAssn	40	28			49
Charleston, 67,915—Kanawha	TbChil	NPAssn	62	41			54
Hillcrest Sanatorium	TbChil	NPAssn	62	41			54
Moundsville, 14,168—Marshall	TB	County	26	23			25
Grand View Sanatorium	TB	County	26	23			25
West Virginia Penitentiary	Inst	State	60	42			697
Hospital	Inst	State	60	42			697
St Marys, 2,201—Pleasants	MeDe	State	80	78			10
West Virginia Training School	MeDe	State	80	78			10
Wheeling, 61,089—Ohio	Mat	NPAssn	22	13	18	23	43
Florence Crittenton Home	Mat	NPAssn	22	13	18	23	43

WISCONSIN

Hospitals and Saaatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Adams, 1,310—Adams	Gen	Corp	10	5	2	16	214
Adams Friendship Hospital	Gen	Corp	10	5	2	16	214
Algoma, 2,652—Kewaunee	Gen	NPAssn	10	7	4	48	233
Algoma Hospital	Gen	NPAssn	10	7	4	48	233
Amery, 1,461—Polk	Gen	Indiv	16	9	5	61	400
Amery Hospital	Gen	Indiv	16	9	5	61	400
Antigo, 9,495—Langlade	Gen	Chureh	50	38	10	188	1,316
Langlade County Memorial Hospital	Gen	Chureh	50	38	10	188	1,316
Appleton, 28,436—Outagamie	Gen	Chureh	170	114	40	996	4,334
St Elizabeth Hospital	Gen	Chureh	170	114	40	996	4,334
Areadia, 1,830—Trempealeau	Gen	Chureh	18	10	6	46	326
St Joseph's Hospital	Gen	Chureh	18	10	6	46	326
Ashland, 11,101—Ashland	Gen	NPAssn	67	34	8	164	1,251
Ashland General Hospital	Gen	NPAssn	67	34	8	164	1,251
St Joseph's Hospital	Gen	Chureh	135	92	15	243	2,613
Baldwin, 918—St Croix	Gen	NPAssn	15	9	6	96	374
Baldwin Community Hosp	Gen	NPAssn	15	9	6	96	374
Baraboo, 6,415—Sauk	Gen	Chureh	45	34	15	245	1,217
St Mary's Ringling Hospital	Gen	Chureh	45	34	15	245	1,217
Beaver Dam, 10,356—Dodge	Gen	Chureh	47	22	8	172	1,046
Lutheran Deaeness Hosp	Gen	Chureh	69	28	14	147	1,024
St Joseph's Hospital	Gen	Chureh	69	28	14	147	1,024
Beloit, 25,365—Rock	Gen	City	85	61	26	668	3,188
Beloit Municipal Hospital	Gen	City	85	61	26	668	3,188
Berlin, 4,247—Green Lake	Gen	NPAssn	29	17	7	125	889
Berlin Memorial Hospital	Gen	NPAssn	29	17	7	125	889
Black River Falls, 2,539—Jackson	Gen	Part	29	20	10	253	600
Krohn Clinie and Hospital	Gen	Part	29	20	10	253	600
Boscobel, 2,608—Grant	Gen	Part	22	6	8	39	216
Brookside Parker Hospital	Gen	Part	22	6	8	39	216
Burlington, 4,414—Racine	Gen	NPAssn	35	17	10	196	887
Burlington Memorial Hosp	Gen	NPAssn	35	17	10	196	887
Chippewa Falls, 10,368—Chippewa	Gen	State	1,439	1,563	6	14	237
Northern Wisconsin Clinoy and Training School	MeDe	State	1,439	1,563	6	14	237
St Joseph's Hospital	Gen	Chureh	115	89	12	310	2,697
Columbus, 2,760—Columbia	Gen	Chureh	40	26	12	147	795
St Mary's Hospital	Gen	Chureh	40	26	12	147	795
Cumberland, 1,530—Barroa	Gen	Part	22	7	4	70	705
Cumberland Hospital	Gen	Part	22	7	4	70	705
Darlington, 2,062—Lafayette	Gen	Part	11	6	4	47	271
McConnell McGreane Hosp	Gen	Part	11	6	4	47	271
Dodgeville, 2,269—Iowa	Gen	NPAssn	23	16	5	107	718

WISCONSIN—Continued

Hospitals and Sanatariums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admis- sions
St. Luke's Hospital**	Gen	Church	100	90	35	1,042	4,383
St. Mary's Hill	N&M	Church	104	73	..	..	478
St. Mary's Hospital**	Gen	Church	170	121	30	781	7,180
St. Michael Hospital*	Gen	Church	145	70	30	691	3,818
Shorewood Hospital-Sanitarium	N&M	Corp	50	30	..	..	345
South View Hospital*	Iso	City	250	52	..	..	1,012
Stark Hospital.....	Unit	of Milwaukee Children's Hospital	..	..	..	..	..
Veterans Admin. Facility*	Gen	Yet	989	839	..	..	4,903
West Side Hospital.....	Gen	TB	204	160	..	..	239
Mondovi, 2,077—Buffalo	Gen	NPAasn	30	15	7	74	933
Mondovi Clinic Hospital...	Gen	Indiv	16	10	4	72	350
Monroe, 6,182—Green	Gen	Church	35	15	12	96	403
Evangelical Deaconess Hosp.	Gen	Church	63	38	16	247	1,567
St. Clare Hospital.....	Gen	..	..	..	..	..	..
Necah, 10,645—Winnebago	Gen	..	..	..	..	..	..
Thecla Clark Memorial Hos- pital*	Gen	NPAasn	55	45	16	437	1,814
New London, 4,825—Waupaca	Gen	Church	40	27	13	223	958
Community Hospital.....	Gen	NPAasn	13	5	6	32	145
New London Memorial Hos- pital	Gen	NPAasn	13	5	6	32	145
Oconomowoc, 4,562—Waukesha	N&M	NPAasn	64	42	..	..	115
Rogers Memorial Sanitarium	Gen	Corp	35	29	4	60	450
Summit Hospital.....	Gen	City	12	6	3	52	284
Oconto Falls, 1,883—Oconto	Gen	City	12	6	3	52	284
Oconto Falls Hospital.....	Gen	City	12	6	3	52	284
Onalaska, 1,742—La Crosse	Gen	County	62	65	..	..	105
Oak Forest Sanatorium*...	TB	County	62	65	..	..	105
Osceola, 642—Polk	Gen	Part	12	7	2	47	318
Ladd Memorial Hospital....	Gen	Church	190	174	34	573	4,404
Oshkosh, 39,089—Winnebago	Gen	Church	190	174	34	573	4,404
Mersey Hospital**	Gen	Church	190	174	34	573	4,404
Park Falls, 3,252—Price	Gen	Indiv	25	12	4	76	605
Park Falls Hospital.....	Gen	Indiv	25	12	4	76	605
Pewaukee, 1,352—Waukesha	Gen	Counties	42	38	..	..	51
Oak Sanatorium*.....	TB	Counties	42	38	..	..	51
Platteville, 4,762—Grant	Gen	Indiv	20	5	4	11	234
Andrew Hospital.....	Gen	Part	25	7	8	55	223
Wilson Cunningham Hosp...	Gen	Part	25	7	8	55	223
Plum City, 368—Pierce	Gen	Indiv	15	10	5	57	318
Plum City Hospital.....	Gen	Indiv	15	10	5	57	318
Plymouth, 4,170—Sheboygan	Gen	Church	36	18	8	158	688
Plymouth Hospital.....	Gen	Church	36	18	8	158	688
Rocky Knoll Sanatorium*...	TB	County	90	80	..	..	57
Portage, 7,016—Columbia	Gen	Church	70	40	14	200	1,373
St. Savior's General Hosp...	Gen	Church	70	40	14	200	1,373
Port Washington, 4,046—Ozaukee	Gen	Church	73	...	12	Estab.	1941
St. Alphonsus Hospital.....	Gen	Church	73	...	12	Estab.	1941
Prairie du Chien, 4,622—Crawford	Gen	Part	18	5	4	21	110
Beaumont Hospital.....	Gen	Part	18	5	4	21	110
Prairie du Chien Sanitarium- Hospital	Gen	NPAasn	50	27	8	115	1,184
Prescott, 857—Pierce	Gen	NPAasn	50	27	8	115	1,184
St. Croixdale Sanitarium...	Gen	N&M	50	32	5	11	150
Purcell (Bayfield P.O.), —Bayfield	Gen	Corp	50	32	5	11	150
Purcell Sanatorium.....	TB	Counties	70	63	..	..	95
Racine, 67,195—Racine	Gen	Church	118	74	40	634	2,667
St. Luke's Hospital**	Gen	Church	200	107	40	650	5,205
St. Mary's Hospital**	Gen	Church	200	107	40	650	5,205
Sunny Rest Sanatorium*...	TB	County	83	61	..	..	53
Reedsburg, 3,608—Sauk	Gen	City	30	12	8	132	616
Reedsburg Municipal Hosp...	Gen	City	30	12	8	132	616
Rhineland, 8,501—Oneida	Gen	Church	75	49	10	234	1,510
St. Mary's Hospital.....	Gen	Church	75	49	10	234	1,510
Rice Lake, 5,819—Barron	Gen	Church	60	27	16	186	1,922
Lakeside Methodist Hospital.	Gen	Church	40	23	8	114	1,163
St. Joseph's Hospital.....	Gen	Church	40	23	8	114	1,163
Richland Center, 4,361—Richland	Gen	NPAasn	60	45	12	132	1,537
Richland Hospital.....	Gen	NPAasn	60	45	12	132	1,537
Ripon, 4,566—Fond du Lac	Gen	City	18	13	6	86	628
Ripon Municipal Hospital...	Gen	City	18	13	6	86	628
River Falls, 2,806—Pierce	Gen	City	25	12	8	105	441
City Hospital.....	Gen	City	25	12	8	105	441
St. Croix Falls, 1,007—Polk	Gen	NPAasn	20	11	4	31	351
St. Croix Falls Hospital...	Gen	NPAasn	20	11	4	31	351
Shawano, 5,565—Shawano	Gen	NPAasn	60	37	16	245	1,484
Shawano Municipal Hospital	Gen	NPAasn	60	37	16	245	1,484
Sheboygan, 40,638—Sheboygan	Gen	Church	131	126	15	695	4,452
St. Nicholas Hospital.....	Gen	NPAasn	82	70	20	261	2,105
St. Nicholas Hospital.....	Gen	NPAasn	82	70	20	261	2,105
..	Gen	Indiv	15	6	4	20	185
..	Gen	Indiv	14	10	6	72	250
..	Gen	Church	75	40	13	266	1,795
..	Gen	NPAasn	18	10	4	67	793
..	Gen	State	242	193	..	..	146
..	Gen	Church	62	62	..	..	91
..	Gen	Church	75	62	15	261	2,105
..	Gen	NPAasn	24	18	9	280	812
Sturgeon Bay, 5,439—Door	Gen	Indiv	28	18	6	115	607
Egeland Memorial Hospital.	Gen	Indiv	14	10	8	61	553
Leasum Hospital.....	Gen	Indiv	14	10	8	61	553

Key to symbols and abbreviations is on page 1071

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Superior, 35,136—Douglas	Gen	Church	50	43	10	119	1,100
St Francis Hospital	Gen	Church	33	24	14	234	779
St Joseph's Hospital	Gen	Church	133	77	23	246	2,031
St Mary's Hospital	Gen	Church	133	77	23	246	2,031
Tomah, 3,817—Monroe	Gen	IA	42	27	5	58	525
Tomah Indian Hospital	Gen	IA	42	27	5	58	525
Tomahawk, 3,365—Lincoln	Gen	Church	60	31	10	51	717
Sacred Heart Hospital	Gen	Church	60	31	10	51	717
Two Rivers, 10,307—Manitowoc	Gen	City	48	39	10	209	2,002
Two Rivers Municipal Hosp	Gen	City	48	39	10	209	2,002
Union Grove, 973—Racine	Gen	City	48	39	10	209	2,002
Southern Wisconsin Colony and Training School	McDe	State	839	806			80
Veterans Administration, —Milwaukee	See	Milwaukee					
Veterans Admin Facility	See	Milwaukee					
Viroqua, 3,649—Vernon	Gen	Part	22	12	5	84	701
Viroqua Hospital	Gen	Part	22	12	5	84	701
Washburn, 2,363—Bayfield	Gen	NPA'sn	14	6	5	26	276
Washburn Hospital	Gen	NPA'sn	14	6	5	26	276
Watertown, 11,301—Jefferson	Gen	Church	75	48	17	328	1,543
St Mary's Hospital	Gen	Church	75	48	17	328	1,543
Waukesha, 19,242—Waukesha	Unit of Milwaukee Children's Hospital,						
Milwaukee Children's Hospital	Unit of Milwaukee Children's Hospital,						
Waukesha Memorial Hosp	Gen	City	85	78	24	612	4,013
Waukesha Springs Sanit	N&M	Corp	50	16			44
Waupaca, 3,458—Waupaca	Gen	Part	12	8	2		245
City Hospital	Gen	Part	12	8	2		245
Waupaca Hosp and Clinic	Gen	Part	13	9	3	42	322
Waupun, 6,798—Fond du Lac	Gen	Part	13	9	3	42	322
Central State Hospital for Insane	Ment	State	335	312			82
Clark and Swartz Hospital	Gen	Part	8	5	4	36	186
Wausau, 27,268—Marathon	Unit of Mount View Sanatorium						
Dr Lee M Willard Memorial Preventorium	Unit of Mount View Sanatorium						
Mount View Sanatorium	TB	County	90	89			71
St Mary's Hospital	Gen	Church	150	86	25	453	3,230
Wausau Memorial Hospital	Gen	NPA'sn	93	66	25	430	2,396
Wauwatosa, 27,769—Milwaukee	Unit of Murdale Sanatorium						
Blue Mound Preventorium	Unit of Murdale Sanatorium						
Milwaukee County Asylum for Chronic Insane	Ment	County	1,716	1,659			297
Milwaukee County Hospital	Gen	County	1,050	522	75	782	13,062
Milwaukee County Hospital for Mental Diseases	Ment	County	1,093	998			542
Milwaukee Sanitarium	N&M	Corp	147	140			339
Murdale Sanatorium	TB	County	585	541			597
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community Hosp	Gen	NPA'sn	28	19	5	100	60
Whitelaw, 267—Manitowoc	TB	County	52	52			70
Maple Crest Sanatorium	TB	County	52	52			70
Wild Rose, 559—Wausau	Gen	Indiv	24			4	Estab 1941
Wild Rose Hospital	Gen	Indiv	24			4	Estab 1941
West Bend, 5,452—Washington	Gen	Church	40	24	8	168	1,079
St Joseph's Hospital	Gen	Church	40	24	8	168	1,079
West DePer, —Brown	Gen	Church	40	24	8	168	1,079
Hickory Grove Sanatorium	TB	County	96	93			61
Whitehall, 1,005—Trempealeau	Gen	NPA'sn	28	19	5	100	60
Whitehall Community							

WISCONSIN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Weyauwega, 1,173—Waupaca Waupaca County Insane Asylum	Ment	County	196	192	..	..	28
Whitehall, 1,035—Trempealeau Trempealeau County Asylum	Ment	County	148	141	..	..	12
Winnebago, 150—Winnebago Winnebago County Asylum	Ment	County	262	260	..	..	30
Wyoceena, 706—Columbia Columbia County Asylum	Ment	County	313	294	..	..	22

WYOMING

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Basin, 1,000—Big Horn Basin Hospital	Gen	Part State	12	4	2	46	216
Wyoming State Sanatorium* TB Casper, 17,964—Natrona Memorial Hospital of Natrona County	Gen	County	140	73	24	309	2,658
Cheyenne, 22,474—Laramie Memorial Hospital of Laramie County	Gen	County	133	72	20	515	2,851
Veterans Admin. Facility	Gen	Vet	151	100	..	..	1,062
Cody, 2,536—Park Cody Hospital	Gen	NPAasn	23	12	6	92	640
Douglas, 2,205—Converse Douglas Hospital	Gen	Indiv	19	11	4	48	445
Evanston, 3,605—Uinta Wyoming State Hospital	Ment	State	675	631	..	..	144
Fort Warren, 22—Laramie Station Hospital	Gen	Army	240	103	6	41	2,441
Fort Washakie, 150—Fremont Wind River Indian Hospital	Gen	IA	50	25	6	79	673
Gillette, 2,177—Campbell McHenry Hospital	Gen	Indiv	15	12	4	51	380
Greybull, 1,828—Big Horn St. Luke's Hospital	Gen	Part	10	3	2	42	189
Jackson, 1,046—Teton St. John's Hospital	Gen	Church	26	7	4	77	429
Kemmerer, 2,026—Lincoln Lincoln County Miner's Hospital	Gen	NPAasn	26	16	5	97	581
..... Gen	Church		20	11	6	..	464
Iverson Memorial Hospital	Gen	County	71	36	15	289	2,088
Lovell, 2,175—Big Horn Lovell Hospital	Gen	Part	20	8	8	167	493
Lusk, 1,814—Niobrara Lusk Hospital	Gen	Indiv	25	14	9	42	495
Spencer Hospital	Gen	Indiv	19	..	4	Estab. 1941	..
Powell, 1,948—Park Whitlock Hospital	Gen	Corp	30	..	No data supplied	..	..
Rock Springs, 9,827—Sweetwater Wyoming General Hosp.	Gen	State	100	64	12	414	2,747
Sheridan, 10,529—Sheridan Sheridan County Memorial Hospital	Gen	County	67	51	11	228	1,402
Veterans Admin. Facility	Ment	Vet	506	554	..	..	222
..... sp. A.	Gen	NPAasn	41	17	7	96	1,025
..... Gen	Corp		20	11	8	130	626
Related Institutions							
Evanston, 3,605—Uinta Jacoby Hospital	Gen	Indiv	6	2	3	6	105
Hanna, 1,127—Carbon Hanna Hospital	Gen	NPAasn	12	5	3	30	250
Lander, 2,594—Fremont Wyoming State Training School	MeDe	State	397	392	2	2	26
Sheridan, 10,529—Sheridan Reynolds Home	Gen	Indiv	12	5	8	127	239
Thermopolis, 2,422—Hot Springs Hilltop Hospital	Gen	Indiv	16	6	6	38	267
Yellowstone Park, 200—Yellowstone National Park Mammoth Hospital	Gen	Indiv	33	17	3	5	260

ALASKA

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Anchorage, 2,277 Alaska Railroad Base Hosp.	Gen	Fed	30	9	5	29	3,348
Providence Hospital	Gen	Church	55	32	10	182	2,271
Bethel, 278 Bethel Hospital	Gen	IA	40	..	6	..	..
Cordova, 980 Cordova General Hospital	Gen	Indiv	30	..	2	20	..
Fairbanks, 2,101 St. Joseph's Hospital	Gen	Chureb	53	47	8	128	1,371
Fort Yukon, 304 Hudson Stuck Memorial Hospital	Gen	Church	40	10	2	27	150

ALASKA—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Haines, 344 Station Hospital	Gen	Army	15	7	1	3	141
Juneau, 4,043 St. Ann's Hospital	Gen	Church	47	35	9	129	911
U. S. Hospital for Natives	Gen	IA	53	44	8	35	291
Kanakanak, 177 Kanakanak Native Hospital	Gen	IA	18	22	1	27	263
Ketchikan, 3,796 Ketchikan General Hospital	Gen	Church	65	40	10	125	1,313
Kodiak, 864 Griffin Memorial Hospital	Gen	Ter	18	6	5	25	189
Kotzebue, 291 Kotzebue Hospital	Gen	IA	17	16	1	5	262
Mountain Village, 76 Mountain Village Hospital	Gen	IA	19	13	2	9	96
Nome, 1,213 Maynard-Columbus Hospital	Gen	Church	20	10	3	34	267
Palmer, 150 Matanuska Valley Hospital	Gen	Corp	30	17	4	41	529
Petersburg, 1,252 Petersburg General Hospital	Gen	City	9	4	3	34	193
St. Paul Island (Unalaska P.O.), 212 St. Paul Island Hospital	Gen	Fed	10	4	2	15	100
Seward, 835 Seward General Hospital	Gen	Church	30	..	4	..	..
Sitka, 1,056 Pioneer's Home Hospital	Inst	Ter	45	..	..	..	..
Skagway, 492 Skagway Hospital	Gen	NPAasn	10	2	2	..	94
Tanana, 185 Tanana Hospital	Gen	IA	30	..	4	..	..
Wrangell, 948 Bishop Rowe General Hosp.	Gen	Church	14	..	3	..	..

CANAL ZONE

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Ancon, 1,140 Gorgas Hospital	Gen	Fed	1,340	724	48	533	20,064
Balboa, 2,902 Palo Seco Leprosy Colony	Lepro	Fed	120	127	..	..	9
Station Hospital	Gen	Army	35	..	..	..	..
Corozal, 1,790 Corozal Hospital	Ment	Fed	340	303	..	..	311
Station Hospital	Gen	Army	47	33	..	..	1,006
Oristobal, 599 Colon Hospital	Gen	Fed	114	105	16	458	5,203
Fort Davis, 293 Station Hospital	Gen	Army	60	52	..	..	2,548
Fort Randolph (Coco Solo P.O.), 724 Station Hospital	Gen	Army	25	17	..	..	1,000
Fort Sherman, 786 Station Hospital	Gen	Army	59	53	..	..	1,235

HAWAII

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinsets	Number of Births	Admissions †
Aiea, 3,021—Honolulu Aiea Hospital	Gen	NPAasn	46	15	4	46	704
Elele, 312—Kauai McBryde Sugar Company's Hospital	Gen	NPAasn	35	27	6	96	537
Ewa, 4,730—Honolulu Ewa Plantation Company Hospital	Gen	NPAasn	48	27	6	132	1,111
Hahaione, —Hawaii Honokaa Sugar Company Hospital	Gen	NPAasn	28	..	4	..	..
Hakalau, 525—Hawaii Hakalau Plantation Hosp.	Gen	NPAasn	25	..	3	20	455
Hana, 293—Maui Hana County Hospital	Gen	County	36	..	4	..	..
Hanalei, 1,088—Kauai Betsui Hospital	Gen	Indiv	10	5	2	37	259
Hilo, 19,468—Hawaii Hilo Memorial Hospital	Gen	County	140	88	18	310	2,556
Dr. Z. Matayoshi Hospital	Gen	Indiv	22	..	..	..	111
Puamale Home	TB	County	163	160	..	..	..
..... —Hawaii	Gen	Indiv	6	2	3	23	104
..... Leprosy	Ter		151	59	..	..	31
..... Mat	NPAasn		50	46	20	1,770	2,724
Kaulaolani Children's Hosp.	Gen	NPAasn	92	62	..	..	3,225
Leahi Home	TB	NPAasn	500	431	..	..	2,556
Queen's Hospital	Gen	NPAasn	254	263	26	1,428	10,550
St. Francis Hospital	Gen	Church	63	58	10	234	2,662
Shriners Hospital for Crippled Children	Orth	NPAasn	28	27	..	..	97
Tripler General Hospital	Gen	Army	407	279	10	160	4,242

Key to symbols and abbreviations is on page 1071

HAWAII—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Hoolehua, —Maul							
Robert W. Shingle, Jr., Memorial Hospital	Gen	Church	19	...	5	...	...
Kahuku, 1,505—Honolulu							
Kahuku Hospital	Gen	NPAasn	30	19	6	125	702
Kalaupapa, —Kalaupapa							
Ter	Ter		515	378	2	5	57
Kapaa, —Kauai							
Samuel Mabelona Memorial Hospital	TB	County	115	96	..	...	66
Gen	Gen	County	50	31	6	99	464
Kilauea, 1,232—Kauai							
Kilauea Hospital	Gen	NPAasn	25	9	5	46	335
Kihala, 720—Hawaii							
Kihala County Hospital	Gen	County	46	19	6	122	626
Koloa, 1,844—Kauai							
Koloa Sugar Company Hospital	Gen	NPAasn	22	11	3	56	490
Kula (
Kula Sanatorium	Gen	County	20	12	3	33	432
Lahaina, 2,730—Maul							
Pioneer Mill Company's Hospital	Gen	NPAasn	65	40	9	150	1,570
Lanai City, —Maul							
Lanai City Hospital	Gen	NPAasn	25	13	5	84	602
Lihue, 2,399—Kauai							
G. N. Wilcox Memorial Hospital	Gen	NPAasn	94	38	11	266	1,833
Maunaloa, —Maul							
Maunaloa Hospital	Gen	NPAasn	19	4	5	22	234
Olaa, 597—Hawaii							
Olaa Hospital	Gen	NPAasn	37	21	6	123	945
Onkala, 526—Hawaii							
Onkala Hospital	Gen	NPAasn	10	...	4	...	...
Paaubau, 536—Hawaii							
Paaubau Sugar Company Hospital	Gen	NPAasn	18	...	2	...	...
Paaulo, 1,232—Hawaii							
Hamakua Mill Company Hospital	Gen	NPAasn	12	...	2	...	...
Pahala, 200—Hawaii							
Hawaiian Agricultural Company Hospital	Gen	NPAasn	39	10	6	113	742
Pala, 4,171—Maul							
Maul Agricultural Company's Hospital	Gen	NPAasn	102	...	10	...	...
Papaaloa, 73—Hawaii							
Lauapahochoe Sugar Company Hospital	Gen	NPAasn	19	6	4	28	250
Papaikou, 518—Hawaii							
Papaikou Hospital	Gen	Indiv	18	...	1	...	...
Pearl City, 1,071—Honolulu							
Waimano Home for Feeble-minded Persons	McDe	Ter	368	363	..	...	20
Pearl Harbor, 200—Honolulu							
U. S. Naval Hospital	Gen	Navy	178	140	..	...	3,389
Pepeekeo, 520—Hawaii							
Pepeekeo Hospital	Gen	NPAasn	41	20	4	110	944
Puunene, 4,081—Maul							
Puunene Hospital	Gen	NPAasn	100	79	24	283	3,778
Schofield Barracks, 4,250—Honolulu							
Station Hospital	Gen	Army	530	305	13	100	6,271
Wahiala, 3,370—Honolulu							
Maek Hospital	Gen	Indiv	9	2	3	33	114
Wahiala, 4,511—Honolulu							
Wahiala Agricultural Company, Ltd. Hospital	Gen	NPAasn	40	17	6	104	601
Wailuku, 6,998—Maul							
Maui Hospital	Gen	County	93	60	10	232	1,471
Waima, 2,031—Kauai							
Waima Hospital	Gen	NPAasn	36	31	6	133	886
Waipahu, 5,874—Honolulu							
Oahu Sugar Company Hospital	Gen	NPAasn	65	...	10	...	...
Tamura Hospital	Gen	Indiv	7	4	3	60	217

PHILIPPINES

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Angeles, 30,542—Pampanga							
Angeles Hospital	Gen	Indiv	24	...	2	...	...
Bacolod, 10,350—Occidental Negros							
Occidental Negros Provincial Hospital	Gen	Gov't	100	...	6	...	...
Provincial Maternity and Children's Hospital	MatCh	Gov't	62	...	18	...	...
Baguio, 5,464—Benguet							
Baguio Hospital	Gen	Gov't	80	...	8	...	...
Hospital Notre Dame de Lourdes	Gen	Church	100	...	10	...	...
Mercy Hospital	Gen	Indiv	18	9	4	13	314
St. Francis Hospital	Gen	Corp	25	...	2	...	...
Station Hospital	Gen	Army	50	...	...	...	...

PHILIPPINES—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions †
Batangas, 41,182—Batangas							
Gen	Gen	Gov't	27	...	3	...	...
Bontoc, 609—Mountain							
Bontoc Hospital	Gen	Gov't	27	...	1	...	...
Butuan, 9,790—Agusan							
Gen	Gen	NPAasn	15	...	2	...	...
Calapan, 13,985—Capiz							
Calapan Provincial Hospital	Gen	Gov't	60	36	3	51	1,191
Calubang, —Laguna							
Calamba Sugar Estate Hospital	Gen	Gov't	34	...	...	...	...
Capiz, 21,996—Capiz							
Emmanuel Hospital	Gen	NPAasn	75	...	6	...	...
Cavite, 22,163—Cavite							
Cosea Hospital	Gen	Church	50	...	5	...	...
Cebu, 65,300—Cebu							
Cebu General Clinic	Gen	Part	25	...	1	...	...
Cebu Maternity House	Mat	NPAasn	30	...	5	...	...
Chong Hoa Chinese Hospital	Gen	NPAasn	39	...	...	...	...
Indiv	Gen	Corp	20	...	5	9	112
Corp	Gen	Gov't	20	...	...	...	197
Gov't	Gen	Gov't	24	1	6	16	394
Cervantes, 2,513—Iloos Sur							
Cervantes Hospital	Gen	Gov't	136	...	7	...	...
Corregidor, —Cavite							
Station Hospital	Gen	Army	30	...	2	...	...
Cotabato, 410—Cotabato							
Cotabato Public Hospital	Gen	Gov't	178	70	6	114	2,190
Cullion, —Palawan							
Cullion Leprosy Colony	Gen	Gov't	40	...	2	...	...
Cuyo, 14,768—Palawan							
Cuyo Public Hospital	Gen	Gov't	618	...	16	...	...
Dagupan, 22,613—Pangasinan							
Pangasinan Provincial Hospital	Gen	Gov't	20	...	3	...	...
Dahican, —Camarines Norte							
Dahican Hospital	Gen	NPAasn	75	...	8	...	...
Dansalan, 5,988—Lanao							
Lanao Public Hospital	Gen	Gov't	34	41	1	12	1,024
Dapitan, 12,865—Zamboanga							
Rizal Memorial Hospital	Gen	Gov't	50	...	...	...	...
Daraga, —Albay							
Albay Provincial Hospital	Gen	Gov't	30	...	3	...	...
Davao, 13,046—Davao							
Davao Mission Hospital	Gen	Church	35	...	2	...	...
Davao Oriental Hospital	Gen	NPAasn	40	...	1	...	...
Davao Public Hospital	Gen	Gov't	40	...	5	...	...
Mintal Hospital	Gen	Corp	75	...	10	...	...
Del Carmen, —Pampanga							
Del Carmen Hospital	Gen	NPAasn	37	22	3	48	1,204
Dumaguete, 16,227—Occidental Negros							
Dumaguete Mission Hospital	Gen	Church	75	...	3	...	...
Fabrica, —Occidental Negros							
Ilen Hospital	Gen	NPAasn	50	...	...	...	...
Fort Stotsenburg, —Pampanga							
Station Hospital	Gen	Army	112	57	6	209	2,150
Hollo, 49,114—Hollo							
Hollo Mission Hospital	Gen	Church	100	...	12	...	...
Hollo Polyclinic and Hosp.	Gen	Indiv	25	...	6	...	...
St. Paul's Mission Hospital	Gen	Church	200	...	...	...	...
Jolin, 5,796—Sulu							
Sulu Public Hospital	Gen	Gov't	46	...	10	...	...
Kabasalan, —Zamboanga							
Pathfinder Estate Hospital	Gen	NPAasn	10	...	...	...	...
Kiangnan, 276—Ifugan							
Kiangnan Hospital	Gen	Gov't	15	...	1	...	...
Knlamburan, 1,290—Lanao							
Knlamburan Hospital	Gen	NPAasn	30	...	...	...	...
Laosag, 38,469—Iloos Norte							
Salle Long Read Memorial Hospital	Gen	Church	40	...	2	...	...
San Antonio Hospital	Gen	Indiv	18	...	1	...	...
Larap, —Camarines Norte							
Philippine Iron Mine Hosp.	Gen	NPAasn	83	...	4	...	...
Legaspi, 62,756—Albay							
Bicol Treatment Station	Lepro	Gov't	250	...	...	...	...
Milwaukee Hospital	Gen	Church	52	...	6	...	...
Lns Banos, 6,335—Laguna							
University of the Philippines Los Banos Infirmary	Gen	Gov't	25	...	2	...	...
Lubungan, 226—Kallina							
Lubungan Public Hospital	Gen	Gov't	10	...	2	...	...
Lucena, 11,939—Tayabas							
Tayabas Provincial Hospital	Gen	Gov't	80	...	3	...	...
Makati, 12,470—Rizal							
Hospital Espanol de Santiago	Gen	NPAasn	75	...	17	...	...
Malaybalay, 9,668—Bukidnon							
Bukidnon Public Hospital	Gen	Gov't	16	...	...	...	...
Malolos, 26,441—Bulacan							
Bulacan Provincial Hospital	Gen	Gov't	45	...	6	...	...

Key to symbols and abbreviations is on page 1071

PHILIPPINES—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions ‡
Manapla, —Occidental Negros North Negros Sugar Company Hospital	Gen	NPAssn	63	...	4	...	...
Mandaluyong, 6,235—Rizal National Psychopathic Hospital	Ment	Gov't	2,975	...	...	...	...
Mandaue, 21,464—Cebu Eversley Childs Treatment Station	Lepro	Gov't	750	...	...	...	...
Manila, 285,306—Rizal Bilbid Hospital	Gen	Gov't	300	...	6	...	...
Chinese General Hospital ..	Gen	NPAssn	150	...	18	...	...
Hospital de San Juan de Dios	Gen	Church	272	...	36	...	...
Mary Chiles Hospital	Gen	NPAssn	70	...	12	...	...
Mary Johnston Hospital ..	Gen	Church	81	66	29	774	1,814
Maternity and Children's Hospital	MatCh	Gov't	72	...	45	...	...
Philippine General Hosp * ..	Gen	Gov't	710	...	185	...	...
Sacred Heart Hospital	Gen	Indiv	30	...	20	...	...
St. Joseph's Hospital	Gen	Corp	75	...	15	...	...
St. Luke's Hospital	Gen	Church	150	...	10	...	...
St. Paul's Hospital	Gen	Church	106	78	12	411	2,973
St. Theresa's Hospital	Gen	Indiv	65	...	10	...	...
Sampaloc General Hospital ..	Gen	Indiv	30	...	10	...	...
San Lazaro Hospital	TbIso	Gov't	1,343	...	...	184	4,390
Sternberg General Hospital ..	Gen	Army	317	242	8	...	...
Margosatubig, —Zamboanga Margosatubig Emergency Hospital	Gen	Gov't	18	...	...	...	...
Mati, 6,440—Davao Mati Emergency Hospital ..	Gen	Gov't	6	...	...	...	...
Naga, 9,396—Camarines Sur Camarines Sur Provincial Hospital	Gen	Gov't	22	...	...	...	...
Hospital Virgen Milagrosa ..	Gen	Indiv	45	...	10	...	...
Olongapo, —Zambales Camilla Simpson Hospital ..	Gen	City	16	...	6	...	...
Paracale, 6,378—Camarines Norte Marsman General Hospital ..	Gen	NPAssn	60	...	3	...	...
Pasay, 18,823—Rizal Harrison Hospital	Gen	Indiv	30	...	5	...	...
Manila Sanitarium and Hospital	Gen	Church	50	...	7	...	...
Mercy Hospital	Gen	Indiv	25	...	5	...	...
Port Lamon, —Surigao Port Lamon Hospital	Gen	NPAssn	14	...	...	...	...
Puerto Princesa, 5,827—Palawan Puerto Princesa Hospital ..	Gen	Gov't	16	...	...	...	...
Quezon City, 2,036—Rizal Philippine Army General Hospital	Gen	State	120	...	...	...	...
Quezon Institute	TB	NPAssn	666	...	...	...	...
Rio Guinobatan, —Masbate Masbate Consolidated Mining Company Hospital	Gen	NPAssn	24	...	2	...	...
Sagada, 167—Bontoc St. Theodore's Hospital	Gen	Church	50	...	5	...	...
San Fernando, 19,885—La Union Bethany Hospital	Gen	Church	40	24	4	91	1,373
Lorma Hospital	Gen	Indiv	22	...	6	...	...
Pampanga Provincial Hosp. Gen	Gen	Gov't	44	...	6	...	...
San Jose, —Mindoro San Jose Hospital	Gen	NPAssn	50	...	...	...	...
San Juan del Monte, 6,618—Rizal Manila Heights Hospital ..	Gen	Indiv	100	...	...	...	...
San Miguel, 18,147—Bulacan Lladra Memorial Hospital ..	Gen	County	12	...	...	...	...
San Pablo, 31,214—Laguna San Pablo Hospital	Gen	City	20	...	...	...	...
San Roque, —Cayte San Roque Hospital	Gen	Indiv	14	...	10	...	...
Santa West Station	Lepro	Gov't	467	...	...	...	...
Santa Cruz, 14,151—Laguna Laguna Provincial Hospital ..	Gen	Gov't	55	...	12	...	...
Silay, 23,065—Occidental Negros Silay Maternity and Children's Hospital	Gen	CyCo	23	7	6	66	507
Sorsogon, 17,049—Sorsogon Sorsogon Provincial Hosp. Gen	Gen	Gov't	14	...	6	...	...
Tacloban, 15,478—Leyte Bethany Hospital	Gen	Church	40	...	3	...	...
Leyte Provincial Hospital ..	Gen	Gov't	40	...	5	...	...
San Roque, —Cayte San Roque Hospital	Gen	Gov't	30	...	1	...	...
San Roque, —Cayte San Roque Hospital	Gen	Church	50	...	4	...	...
San Roque, —Cayte San Roque Hospital	Gen	Indiv	15	...	...	...	...
San Roque, —Cayte San Roque Hospital	Gen	Gov't	35	...	6	...	...
San Roque, —Cayte San Roque Hospital	Gen	Gov't	12	...	4	...	...
San Roque, —Cayte San Roque Hospital	Gen	Indiv	10	1	2	56	269
Reyes Hospital and San Roque, 17,764—Ilocos Sur Ilocos Sur Provincial Hosp. Gen	Gen	Gov't	35	23	4	23	1,300
Philippine Christian Institute Hospital	Gen	Church	30	...	5	...	...

PHILIPPINES—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions ‡
Zamboanga, 30,708—Zamboanga Brent Hospital	Gen	Church	60	...	...	...	...
Station Hospital	Gen	Army	26	...	...	...	74
Zamboanga General Hosp ..	Gen	Gov't	120	...	...	...	...

PUERTO RICO

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions ‡
Arecibo, 12,863—Arecibo Clinica Dr. Susoni	Gen	Indiv	124	...	...	...	...
Bayamon, 12,986—San Juan Bayamon Charity District Hospital	Gen	Gov't	308	251	35	662	5,214
Caguas, 19,791—Guayama Clinica San Rafael	Gen	Indiv	65	30	4	27	589
Cayey, 5,953—Guayama Clinica Font	Gen	Indiv	40	36	...	...	525
Tajardo, 7,322—Humacao Coomb's Hospital	Gen	NPAssn	30	25	...	...	914
Tajardo Charity District Hospital	Gen	Gov't	300	216	35	724	4,789
Guayama, 10,353—Guayama Guayama Tuberculosis Sanatorium	TB	Gov't	100	...	...	...	...
Humacao, 7,937—Humacao Clinica Oriente	Gen	Part	47	21	3	26	818
Ryder Memorial Hospital ..	Gen	Church	52	44	8	49	1,211
Jayuya, 4,808—Ponce Catalina Figueras Memorial Hospital	Gen	City	15	...	...	...	...
Juana Diaz, 2,466—Ponce Municipal Hospital	Gen	City	40	...	...	...	...
Mayaguez, 37,060—Mayaguez Clinica Betances	Gen	Indiv	100	38	10	21	560
Mayaguez and Western Poly-clinic	Gen	Part	100	...	...	63	2,410
Tuberculosis Hospital	TB	Gov't	200	...	...	...	...
Ponce, 53,430—Ponce Clinica Quirurgica Dr. Pina ..	Gen	NPAssn	163	124	29	72	3,121
Hospital Municipal Valentin Tricoche	Gen	City	300	...	...	...	...
Insular Blind Asylum	Inst	State	110	60	...	...	366
St. Luke's Memorial Hosp. Gen	Gen	Church	75	62	12	107	741
Santo Asilo de Damas Hospital ..	Gen	Church	130	...	...	...	...
Tuberculosis Hospital and Center	TB	Gov't	312	304	...	...	569
Rio Piedras, 13,408—San Juan Clinica Dr. M. Julia	N & M	Indiv	150	125	...	...	63
Insular Lepor Colony	Lepro	Gov't	60	...	...	...	...
Insular Tuberculosis Sanatorium	TB	Gov't	846	839	...	50	1,142
Psychiatric Hospital of Puerto Rico	Ment	Gov't	1,065	...	...	...	...
Sanatorio de la Sociedad Espanola de Auxilio Mutuo y Beneficencia de Puerto Rico	Gen	NPAssn	120	95	25	122	1,447
San Juan, 114,115—San Juan Capital City Hospital	Gen	City	406	...	...	...	...
Chalca Diaz Garcia	Gen	Corp	80	71	6	61	2,519
Clinica Miramar	Gen	Indiv	160	50	5	5	666
Hospital San Jose	Gen	Corp	130	71	16	61	2,000
Ophthalmic Institute of Puerto Rico	Eye	Corp	60	43	...	...	1,701
Presbyterian Hospital	Gen	Church	120	97	23	533	2,769
Station Hospital	Gen	Army	150	...	2	...	...
University Hospital of the School of Tropical Medicine	Gen	Gov't	52	36	8	...	751
Santurce, —San Juan Hospital Almiya	Gen	Indiv	100	60	15	24	794
Utundo, 4,758—Arecibo Clinica San Miguel	Gen	Indiv	80	...	...	...	...
Yauco, 8,607—Mayaguez Clinica "El Amparo"	Gen	Indiv	22	1	1	1	47

VIRGIN ISLANDS

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Basinets	Number of Births	Admissions ‡
Charlotte Amalie, 7,936—St. Thomas Island Municipal Hospital	Gen	CyCo	100	51	12	133	1,201
Christiansted, 3,767—St. Croix Island Christiansted Municipal Hospital ..	Gen	City	61	49	14	95	1,202
Richmond Hospital	Ment	City	50	...	...	...	...
St. Croix Hospital for Leprosy	Lepro	City	92	60	...	...	2
Frederiksted, 2,693—St. Croix Island Frederiksted Municipal Hosp. Gen	Gen	City	65	47	13	73	1,765

Key to symbols and abbreviations is on page 1071

SCHOOLS FOR CLINICAL LABORATORY TECHNICIANS

The original survey of 196 schools for clinical laboratory technicians was published in *THE JOURNAL*, Aug. 29, 1936, together with the first list of 96 approved schools. Essentials had been formulated by the Council on Medical Education and Hospitals of the American Medical Association, with the cooperation of the American Society of Clinical Pathologists and ratified by the House of Delegates of the American Medical Association in May 1936.

There are currently 174 such schools on the approved list. The returns from these schools indicate that 917 students were graduated during the year 1941. This represents an increase of 216 graduates as compared with the previous year. In general, the enrolment in these schools is small, only 41 schools having a maximum enrolment of 10 or more students.

One hundred and thirteen of the approved schools report that all their graduates find positions locally, and 61 schools report that their graduates are somewhat in excess of the local needs. The statistics in general suggest that the present demand for technicians undoubtedly exceeds the number that are being graduated each year. During the calendar year 1941 there was a total of 1,084 students in the approved schools. The maximum number of students that could be accommodated in the present approved schools is 1,254.

During the past year changes have been made in the prerequisites for admission in the Essentials of an Acceptable School for Clinical Laboratory Technicians, as follows:

(a) Two years of college work, including chemistry and biology, from an accredited college or university. After Jan. 1, 1943 this requirement shall read: Two years of college work, including general chemistry, quantitative chemistry and biology from an accredited college or university. Bacteriology may be substituted for biology. Organic chemistry and physics are highly recommended.

(b) Graduation from a school of nursing recognized by the state board of nurse examiners, and in addition college chemistry.

After Jan. 1, 1943 requirements for nurses shall include one year of college work, 30 semester hours (45 quarter hours), including courses in chemistry and biology.

The majority of the approved schools require for admission two years of preliminary college training,

while approximately one fourth of the schools require a degree from an acceptable college. A few schools accept nurse training in lieu of a portion of the required college work. Although two of the schools affiliated with colleges are apparently admitting students directly from high school, the required courses extend over four or five years and include all the prerequisites for admission to approved schools.

The length of the course within the schools themselves is twelve months in 77 per cent of the schools. Other schools have programs ranging from fifteen to twenty-four months duration.

It is now possible to indicate the number of approved schools which have definite affiliations with colleges and universities. Fifty-eight schools report that they have entered into such affiliations as a result of which students receiving their prerequisite training in a university or college receive their hospital training in a designated institution. Forty-four colleges having such affiliations are granting college credit for the time spent in the school for the training of laboratory technicians. This credit ranges from one-half semester to two years, with the majority reporting one complete year of college credit, given to the students who are properly enrolled on completion of their course as a laboratory technician.

Approximately 48 per cent of the schools charge no tuition. Some affiliated with universities charge the usual university fees. The tuition in the other schools varies from \$25 to \$300. Only approximately 15 per cent of all schools have a tuition charge of more than \$150.

There is definite evidence of an increasing demand for laboratory technicians as well as an increasing interest in this field on the part of college women.

Correspondence regarding schools for the training of clinical laboratory technicians should be addressed to the office of the Council on Medical Education and Hospitals. Graduates of approved schools desiring registration should communicate with the Board of Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Ind.

NOTE: The list of approved schools appears on pages 1138-1142.

SCHOOLS OF OCCUPATIONAL THERAPY

At the Milwaukee Session of the House of Delegates of the American Medical Association in 1933 a resolution was introduced that some plans be effected for the establishment of standards, ratings and inspections of training schools in occupational therapy. This program was referred to the Council on Medical Education and Hospitals, and all of the 13 existing schools were surveyed. Essentials of an Acceptable School of Occupational Therapy were ratified by the House of Delegates of the American Medical Association at the Atlantic City session in 1935, such standards to become effective on Jan. 1, 1939. A report of the Council on Medical Education and Hospitals to the House of Delegates in 1936 contained the names of 4 schools which had already met these standards. There are currently 6 schools on the approved list.

The occupational therapist is trained to work under the direction of a physician and should be capable of

suggesting programs designed to recreate specific functions or to encourage restoration of impaired functions.

The 1941 questionnaires returned by the 6 schools currently approved indicate that 118 students were graduated from these schools. There are 162 additional students who are expected to graduate in 1942.

Prerequisites for enrolment in an approved occupational therapy school include one year of general college, while 1 school requires two years of college work. Although 4 schools admit students directly from high school, the required courses extend over a period of five years and include all the prerequisites for admission to approved schools of occupational therapy. The courses based on one or two years of preliminary college work operate on a twenty-seven month or three year program. All schools grant a diploma when the student graduates, while 4 offer a bachelor's degree in occupa-

APPROVED SCHOOLS OF OCCUPATIONAL THERAPY

Name and Location	Director	College or University Affiliation	Duration	Enrolment Starts	Entrance Requirements	Tuition	Certificate, Diploma, Degree	Total Graduates in 1941
Boston School of Occupational Therapy, 7 Harcourt St., Boston	Mrs. John A. Greene	None	30 consecutive mos.	September	1 yr. coll.	\$300 yr.	Diploma	26
Kalamazoo State Hospital School of Occupational Therapy, Kalamazoo, Mich.	Miss Marion R. Spear, B.S.	Western Michigan College of Education, Kalamazoo	27 consecutive mos. for diploma and 5 yrs. for degree course	April and October	1 yr. coll. for diploma course; high sch. grad. for degree course	\$70 yr. at Western Michigan College	Diploma or B. S. Degree	7
St. Louis School of Occupational and Recreational Therapy, 4567 Scott Avenue, St. Louis	Miss Geraldine R. Lermitt, A.B.	Washington University, St. Louis	3 yrs. for diploma and 5 yrs. for degree course	September	2 yrs. coll. for diploma course; high sch. grad. for degree course	\$325 yr.	Diploma or B. S. Degree	10
Philadelphia School of Occupational Therapy, 419 South 19th Street, Philadelphia	Miss Helen S. Willard, A.B.	University of Pennsylvania, Philadelphia	3 yrs. for diploma and 5 yrs. for degree course	September	1 yr. coll. for diploma course; high sch. grad. for degree course	\$600 for 3 yr. course; candidates for degree pay univ. fees	Diploma or B. S. Degree	26
Milwaukee-Downer College, Department of Occupational Therapy, 2512 East Hartford Avenue, Milwaukee	Miss Henrietta McNary	Milwaukee-Downer College	3 yrs. for diploma and 5 yrs. for degree course	September	1 yr. coll. for diploma course; high sch. grad. for degree course	\$250 yr. for diploma course; \$230 yr. for degree course	Diploma or B. S. Degree	13
University of Toronto, Department of University Extension, Toronto, Ont., Canada	Mr. W. J. Dunlop, Director of University Extension and Publicity; Miss Helen F. LeVesconte, Supervisor of Course	University of Toronto	30 consecutive mos.	September	1 yr. coll.	\$175 yr.	Diploma	36

tional therapy. Only 1 school admits male students to its regular classes.

The annual tuition varies from \$70 to \$325.

Correspondence regarding schools training occupational therapy technicians should be addressed to the office of the Council on Medical Education and Hospitals. Graduates of approved schools desiring registration should communicate with the American Occupational Therapy Association, 175 Fifth Avenue, New York City.

SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

The House of Delegates of the American Medical Association in 1934 requested that some plan be effected for the establishment of standards, ratings and inspections of training schools for physical therapy technicians. The Council on Medical Education and Hospitals assumed responsibility for this program and by 1936 had completed a survey of these schools. Certain minimum standards were formulated. These were presented to the House of Delegates of the American Medical Association and were ratified in May 1936. The first published list of 13 approved schools for physical therapy technicians appeared in THE JOURNAL in August 1936. At present there are 16 approved schools.

In 1941, to meet the emergency requirements of the Army, a concentrated curriculum involving intensive courses in the basic principles of physical therapy was instituted by nine schools. Such courses with the approval of the Council include a minimum of experience consisting of eight hundred hours of theory and laboratory work as well as two hundred hours of practice within a six months period. Additional schools are considering the adoption of similar programs. The shortening of the training program occurs in the clinical practice. Graduates of such courses are not considered qualified technicians but are eligible for the U. S. Civil Service rating of Apprentice Physiotherapy Aide and therefore are available for service in the armed forces. The schools offering these concentrated courses are certifying the students' training in the basic sciences and grant a certificate after an additional six months of satisfactory experience and training in the armed forces. After receiving this certificate the student is eligible for promotion to the rank of Physiotherapy Aide by the U. S. Civil Service Commission and for registration by the American Registry of Physical Therapy Technicians.

The 1941 questionnaires returned by the sixteen schools currently approved indicate that 168 students can be trained in the regular courses, while 400 can be trained in the emergency courses. There was a total of 238 graduates last year, including only 84 students who completed the concentrated six months curriculum.

The common experience of the schools charging tuition is that they cannot obtain enough students to fill their classes in spite of the large number of applications. Aside from the schools charging no tuition, the fees vary from \$200 to \$547 for the regular course and from \$200 to \$286 for the emergency course.

The acute shortage of physical therapy aides reported by the Central Physical Therapy Board of the Office of the Surgeon General of the U. S. Army has been referred to the Council and is being studied by it. The available facilities for training 400 students in the emergency courses in addition to the facilities for the training of 168 students in the regular courses would appear to indicate that there is now ample provision for the training of students if a sufficient number of individuals can be interested in undertaking such training.

Correspondence regarding schools for physical therapy technicians should be addressed to the Council on Medical Education and Hospitals. Graduates of approved schools desiring registration should communicate with the American Registry of Physical Therapy Technicians, 30 North Michigan Avenue, Chicago.

SCHOOLS APPROVED FOR TRAINING PHYSICAL THERAPY TECHNICIANS

By the Council on Medical Education and Hospitals

Name and Location of School	Medical Director	Technical Director	Entrance Requirements *	Duration		Time of Admission		Tuition **	Certificate { Diploma Degree }
				Emergency Course	Regular Course	Emergency Course	Regular Course		
Children's Hospital, Los Angeles	Steele F. Stewart, M.D.....	Miss Lily H. Graham.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll.	12 mos. 6 mos. ¹	12 mos. ¹ 6 mos. ¹	Feb. and Sept.	Feb. and Sept.	\$200 R \$200 E	Diploma R Certificate E
Stanford University, Stanford University, Calif....	William H. Northway, M.D.....	Miss Catherine Worthingham, A.B., M.A.....	(a) R. N. (b) Phys. educ. major (c) 3 yrs. coll.	12 mos. ¹	7 mos. ¹	Jan. and June	Jan. and June	\$420 R \$280 E	Certificate or R. A.
Walter Reed General Hospital, Washington, D. C....	B. A. Strickland, Jr., Capt., M.C.	Miss Emma E. Vogel.....	Phys. educ. major	.....	6 mos.	.....	Quarterly Jan. and July	None	Certificate
Northwestern University Medical School, Chicago...	John S. Coulter, M.D.....	Miss Gertrude Beard, R.N.....	(a) R. N. (b) Phys. educ. major (c) 3 yrs. coll.	9 mos. ¹	6 mos. ¹	Oct.	Oct.	\$200 R \$300 E	Certificate
Bowdoin-Boston School of Physical Education, Boston	Arthur L. Watkins, M.D.....	Miss Constance K. Greene.....	High sch. grad.	2 yrs. 4 yrs. ²	.....	Sept.	.....	\$100 yr.	Diploma or B. S.
Harvard Medical School, Boston.....	Frank R. Ober, M.D.....	Miss Janet B. Merrill.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll. ³	9 mos.	6 mos. ¹	Sept. and March	Sept. and March	\$200 R \$200 E	Certificate
Boston University, Sargent College of Physical Education, Cambridge, Mass.....	Louis Howard, M.D.....	Mrs. Luella W. Fuller.....	2 yrs. coll.	2 yrs.	4	Oct.	4	\$147	Certificate and B. S.
Posse Institute, Kenil Green, Mass.....	.....	Miss Lucy G. Marshall.....	High sch. grad.	3 yrs. ¹	.....	Sept.	.....	\$415 yr.	Diploma
University of Minnesota, Minneapolis.....	M. E. Knapp, M.D.....	Miss Sara E. Kollman, R.N.....	(a) R. N. (b) Phys. educ. major (c) Medical technology grad. with B.S. degree	12 mos. ¹	.....	June and Sept.	.....	Univ. fees	Certificate
Mayo Clinic, Rochester, Minn.....	Frank H. Krusen, M.D.....	Mr. Carl O. Moc, R.N.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll.	.....	6 mos. ¹	.....	Jan. and July	None	Certificate
St. Louis University School of Nursing, St. Louis..	Alexander J. Kotkis, M.D.....	Sister M. Consella, R.N.....	High sch. grad.	4 yrs. ¹	.....	Jan. and Sept.	.....	\$250 yr.	B. S.
University of Buffalo School of Nursing, Buffalo...	George G. Martin, M.D.....	Miss Edna Beaver, R.N.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll.	12 mos. ¹	6 mos. ¹	Feb. and Sept.	Feb. and Sept.	\$425 R \$375 E	Certificate
Hospital for Special Surgery, New York City.....	Kristian G. Hansson, M.D.....	Miss Ethel M. Willmer.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll.	9 mos. ¹	6 mos. ¹	Sept.	Sept.	\$200 R \$200 E	Diploma
D. T. Watson School of Physiotherapy, Leeds, Pa.	Jessie Wright, M.D.....	Miss Dorothy Lovdahl.....	(a) R. N. (b) Phys. educ. major (c) 2 yrs. coll. ⁵	2 yrs. ¹	6 mos. ¹	Sept.	Jan. and July	None R \$200 E	Diploma R Certificate E
Richmond Professional Institute of the College of William and Mary, Richmond, Va.....	Thomas W. Wheelton, M.D.....	Miss Alice Jones.....	(a) R. N. (b) Phys. educ. major (c) Coll. grad. (d) High sch. grad.	9 mos. 4 yrs.	.....	Feb. and Sept.	.....	Coll. fees	Certificate or B. S.
University of Wisconsin Medical School, Madison...	Ernst A. Poble, M.D.....	Miss Margaret Kohl, B.S.....	(a) R. N. (b) Phys. educ. major	12 mos. ¹	.....	Feb. and Sept.	.....	Univ. fees	Certificate

* Courses are so arranged that any of the entrance requirements (a, b, c or d) will qualify students for training.

** R = Regular course; E = Emergency course.

1. Male students are admitted.

2. Four year course leads to B.S. degree from Simmons College.

3. This group admitted to emergency course only.

4. Emergency course offered in cooperation with Harvard Medical School.

5. Only those with three years of college are admitted to emergency course.

Schools Approved for Training Clinical Laboratory Technicians by the Council on Medical Education and Hospitals

Schools Approved for Training Clinical Laboratory Technicians by the Council on Medical Education and Hospitals

NOTE: The abbreviation Br. fee, under "Tuition" indicates breakage fee. Degrees mentioned in last column are granted by affiliated colleges and universities. Those who wish to enroll in a course given by the college or university or

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Students lacking the scholastic requirements should contact the registrar of the college or university and not the pathologist in charge. Those who wish to enroll in a course given by the college or university or

who desire to transfer their credits should correspond with the registrar and not the pathologist.

Name and Location of School	Pathologist in Charge	College or University Affiliation	Credit Allowed by Affiliated College or University for Time Spent in Hospital	Entrance Requirements	Duration	Time of Admission	Maximum Enrollment	Tuition	Certificate, Diploma, Degree
ARIZONA									
St. Joseph Hospital, Phoenix ^{a, b}	O. O. Williams, M.D.	Arizona State Teachers College, Tempe	32 semester hrs.	3 yrs. coll. ¹	12 mos.	July	4	\$125	Certificate & Degree
ARKANSAS									
University Hospital, Little Rock ^{a, b}	E. L. Wilbur, M.D.	University of Arkansas School of Medicine, Little Rock	74 quarter hrs.	2 yrs. coll.	12 mos.	July	4	\$100	Certificate
CALIFORNIA									
Children's Hospital, Los Angeles	A. Wright, M.D.			Coll. degree	12 mos.	July & Aug. Monthly	4	None	Diploma Certificate
Los Angeles County Hospital, Los Angeles ^a	N. Evans, M.D.			Coll. degree	15 mos.		14	\$90 (Br. fee)	Certificate
White Memorial Hospital, Los Angeles ^{a, b}	O. B. Pratt, M.D.	College of Medical Evangelists, Los Angeles	Not settled	2 yrs. coll.	12 mos.	Sept.	8	\$100	Certificate
Collins P. and Howard Huntington Memorial Hospital, Pasadena	A. G. Ford, M.D.			Coll. degree	12 mos.	July	7	\$10 (Br. fee)	Certificate
Mary's Help Hospital, San Francisco	Z. E. Bohn, M.D.			2 yrs. coll.	12 mos.	Varies	2	\$120 (Br. fee)	Certificate
St. Zion Hospital, San Francisco ^a	C. Weiss, M.D.			Coll. degree	12 mos.	Quarterly	5	\$100	Certificate
University of California Hospital, San Francisco ^a	T. L. Aulhausen, M.D.	Univ. of California, Los Angeles		2 yrs. coll.	12 mos.	Varies	6	None	None
COLORADO									
Children's Hospital, Denver ^a	E. I. Dobos, M.D.	University of Colorado, Boulder	45 quarter hrs.	2 yrs. coll.	12 mos.	June	2	\$200 and \$20 (Br. fee)	Certificate B. S.
Colorado General Hospital, Denver ^{a, b}	E. R. Mugroge, M.D.	University of Denver, Denver	45 quarter hrs.	3 yrs. coll.	12 mos.	Summer quarter	12	\$20 (Br. fee)	B. S.
Mercy Hospital, Denver ^a	P. Hilkowitz, M.D.	University of Denver, Denver	45 quarter hrs.	3 yrs. coll.	12 mos.	Quarterly	8	\$5 (Br. fee)	B. S.
St. Anthony's Hospital, Denver ^a	P. Hilkowitz, M.D.	University of Denver, Denver	45 quarter hrs.	3 yrs. coll.	12 mos.	Quarterly	7	\$5 (Br. fee)	B. S.
DISTRICT OF COLUMBIA									
George Washington University Hospital, Washington	R. M. Chelsser, M.D.	George Washington University, Washington	None	2 yrs. coll.	12 mos.	July, Sept. & Nov. Varies	4	None	Certificate
Providence Hospital, Washington	H. H. Leffler, M.D.			2 yrs. coll.	12 mos.		3	None	Certificate
FLORIDA									
Florida State Hospital, Chattahoochee ^a	E. H. Ruediger, M.D.			3 yrs. coll.	12 mos.	June, July & Aug.	4	None	Diploma
GEORGIA									
Grady Hospital, Atlanta	F. W. Townsend, M.D.			Coll. degree	12 mos.	June to Sept. Jan. & June	13	None	Certificate
Piedmont Hospital, Atlanta	W. B. Matthews, M.D.			Coll. degree	12 mos.		4	None	Certificate
University Hospital, Augusta ^b	E. R. Ford, M.D.	University of Georgia School of Medicine, Augusta		Coll. degree	12 mos.	Sept.	2	\$100	Certificate
Emory University Hospital, Emory University	R. R. Krucke, M.D.	Emory University Graduate School, Emory University	45 quarter hrs.	Coll. degree	12 or 18 mos.	Oct.	8	\$225 (18 mos.) None (12 mos.) \$5 (Br. fee)	M. S. (18 mos.) Certificate (12 mos.) Certificate (12 mos.)
ILLINOIS									
Michael Reese Hospital, Chicago	K. M. Howell, M.D.			2 yrs. coll.	12 mos.	Monthly	14	\$100	Certificate
St. Paul Hospital, Chicago ^a	I. Divisoli, M.D.			2 yrs. coll.	12 or 18 mos.	Every 2 mos.	14	\$70 and \$10 (Br. fee)	Diploma
Northwestern University Medical School, Chicago ^b	O. E. Hepler, M.D.	Northwestern University Medical School, Chicago	4 1/2 sem. hrs. (12 mos.) 24 semester hrs. (18 mos.)	2 yrs. coll. (12 mos.) Coll. degree (18 mos.)	12 or 18 mos.	Monthly	12	\$50	M. S. (18 mos.) Certificate (12 mos.) Certificate (12 mos.)
INDIANA									
Provident Hospital, Chicago ^a	J. H. Lewis, M.D.			2 yrs. coll.	12 mos.	Oct.	5	\$100	Certificate
St. Bernard's Hospital, Chicago ^a	C. C. Guy, M.D.			2 yrs. coll. or RN with 1 yr. chemistry	12 mos.		4	\$200 and \$10 (Br. fee)	Certificate
MISSOURI									
Transmont Hospital, Evansston	E. L. Benjamin, M.D.			Coll. degree	12 mos.	Feb. & July	6	\$100	Certificate
St. Francis Hospital, Peoria ^a	J. E. Kraus, M.D.			2 yrs. coll.	12 mos.	Sept.	8	\$10 (Br. fee)	Certificate
St. John's Hospital, Springfield	H. M. Steen, M.D.			2 yrs. coll.	12 mos.	Sept.	6	\$50	Certificate
St. Theresa's Hospital, Waukegan	P. J. Melolek, M.D.			2 yrs. coll.	12 mos.	Sept.	4	\$100 and \$15 (Br. fee)	Diploma

INDIANA									
Indiana University Medical Center, Indianapolis ^b	C. G. Culbertson, M.D.....	Indiana University, Bloomington.....	54 semester hrs.	2 yrs. coll. (24 mos.)	12 mos. 12 or 24 mos.	June June, July & Aug.	10	None	Certificate
Methodist Hospital, Indianapolis ^a	H. M. Banks, M.D.....	.....	.....	Coll. degree (12 mos.)	.....	.....	8	None	Certificate
South Bend Medical Laboratory, South Bend ^a									
.....	A. S. Giordano, M.D.....	.....	.....	2 yrs. coll.	18 mos.	Jan. & Sept.	2	\$125	None
KANSAS									
Bethany Hospital, Kansas City.....	W. W. Summerville, M.D.....	.....	.....	Coll. degree	18 mos. ⁵	Feb. & July	6	None	Certificate
University of Kansas Hospitals, Kansas City ^a	H. R. Wahl, M.D.....	University of Kansas, Lawrence	3 semester hrs.	Coll. degree	18 mos. ⁵	Jan. & July	14	None	Certificate
St. Francis Hospital, Wichita.....	C. A. Helwig, M.D.....	Manly Hospital, Wichita	None	2 yrs. coll.	12 mos.	Sept.	6	\$150	Diploma
Wichita Hospital, Wichita ^a	L. C. Murphy, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Sept. Fall	6	\$150 and \$5 (Br. fee)	Certificate
KENTUCKY									
Good Samaritan Hospital, Lexington ^a	E. S. Maxwell, M.D.....	University of Kentucky, Lexington	24 semester hrs.	3 yrs. coll.	12 mos.	Feb. & Sept.	20	Univ. fee and \$5 (Br. fee)	Diploma & B. S.
St. Joseph's Hospital, Lexington.....	E. S. Maxwell, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Jan. & Sept.	4	\$150 and \$10 (Br. fee)	Certificate
Kentucky State Department of Health Laboratory, Louisville ^a	I. H. South, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Feb., July & Sept.	20	\$300 and \$10 (Br. fee)	Diploma
Norton Memorial Infirmary, Louisville ^a	E. S. Greenwood, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Quarterly	3	\$160	Certificate
St. Joseph Infirmary, Louisville ^b	H. M. Weaver, M.D.....	Nazareth College, Louisville.....	18 semester hrs.	2 yrs. coll.	12 mos.	Sept.	4	\$200	None
St. Mary and Elizabeth Hospital, Louisville ^b	H. M. Weaver, M.D.....	Nazareth College, Louisville.....	18 semester hrs.	2 yrs. coll.	12 mos.	July & Sept.	4	\$120	Certificate
LOUISIANA									
Charity Hospital, New Orleans ^a	E. S. Mosca, M.D.....	Loyola University, New Orleans	.....	Coll. grad.	12 mos.	Monthly	15	None	None
Hofel Diet Sisters' Hospital, New Orleans ^a	M. Courte, M.D.....	Loyola University, New Orleans	None	Coll. grad.	12 mos.	Sept.	5	Univ. fees	B. S.
Mercy Hospital-Saint Memorial, New Orleans ^a	G. H. Hauser, M.D.....	Loyola University, New Orleans	None	2 yrs. coll.	12 mos.	.....	3	\$50	Certificate
T. L. Schumpert Memorial Sanitarium, Shreveport ^a	W. P. Butler, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Jan. & July	6	None	None
Shreveport Charity Hospital, Shreveport ^a	W. R. Matthews, M.D.....	.....	.....	Coll. degree	18 mos.	.....	.....	.....	.....
MAINE									
Central Maine General Hospital, Lewiston.....	J. Gottlieb, M.D.....	.....	.....	Coll. degree	12 mos.	Quarterly	12	\$100	None
MARYLAND									
Mercy Hospital, Baltimore.....	H. T. Collenberg, M.D.....	.....	.....	2 yrs. coll. or RN+1 yr. coll.	20 mos.	Sept.	14	\$200	Certificate
MASSACHUSETTS									
Faulkner Hospital, Boston ^b	G. K. Mallory, M.D.....	Simmons College, Boston.....	32 semester hrs.	Coll. degree	12 mos.	Feb. & Sept.	3	\$225	Diploma
Mercy Hospital, Springfield.....	J. E. Dwyer, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Quarterly	5	Br. fee	Certificate
Worcester City Hospital, Worcester.....	R. H. Goodale, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Every 2 mos.	6	None	Diploma
Worcester State Hospital, Worcester.....	J. M. Looney, M.D.....	.....	.....	Coll. degree	12 mos.	Jan. & July	2	None	Certificate
MICHIGAN									
Levin Y. Post Montgomery Hospital, Battle Creek.....	A. A. Humphrey, M.D.....	.....	.....	Coll. degree	12 mos.	Jan., June & Aug.	3	\$25 (Br. fee)	Certificate
Mercy Hospital, Bay City ^a	W. G. Chamberlain, M.D.....	.....	.....	2 yrs. coll.	12 mos.	Varies	4	\$100	Diploma
City of Detroit Receiving Hospital, Detroit ^b	O. A. Brice, M.D.....	Wayne University, Detroit.....	20 semester hrs.	2 yrs. coll.	12 mos.	July	12	\$100	Certificate
Grace Hospital, Detroit ^b	C. I. Owen, M.D.....	Wayne University, Detroit.....	20 semester hrs.	2 yrs. coll.	12 mos.	Jan., July & Sept.	14	\$150 & \$10 (Br. fee)	Certificate
Henry Ford Hospital, Detroit ^b	F. W. Hartman, M.D.....	Graduate School of Wayne University, Detroit.....	20 semester hrs.	Coll. degree	18 mos.	Varies	10	None	Certificate
Providence Hospital, Detroit ^b	D. H. Kaump, M.D.....	Wayne University, Detroit.....	20 semester hrs.	3 yrs. coll. ¹	12 mos.	Quarterly	8	\$100	Diploma
Woman's Hospital, Detroit ^b	D. C. Denver, M.D.....	Wayne University, Detroit.....	20 semester hrs.	3 yrs. coll. ¹	12 mos.	Quarterly	8	\$100	Diploma
Eloise Hospital, Eloise ^b	S. E. Gould, M.D.....	Wayne University, Detroit.....	20 semester hrs.	3 yrs. coll. ¹	12 mos.	July & Oct.	9	\$100	Certificate
Harley Hospital, Flint.....	O. R. Dackow, M.D.....	Michigan State College, East Lansing	30 semester hrs.	3 yrs. coll. ¹	12 mos.	Feb. & July	7	None	Diploma
Blooditt Memorial Hospital, Grand Rapids ^a	C. A. Payne, M.D.....	Michigan State College, East Lansing	30 semester hrs.	3 yrs. coll.	12 mos.	July	2	None	B. S.
Edward W. Sparrow Hospital, Lansing.....	C. E. Black, M.D.....	Michigan State College, East Lansing	30 semester hrs.	3 yrs. coll.	12 mos.	July	4	\$120	B. S.
St. Lawrence Hospital, Lansing.....	C. E. Black, M.D.....	Michigan State College, East Lansing	30 semester hrs.	3 yrs. coll.	12 mos.	Varies	10	\$25 quarter	Diploma & B. S.
.....	.....	.....	.....	3 yrs. coll.	12 mos.	Varies	4	\$25	Diploma & B. S.

Schools Approved for Training Clinical Laboratory Technicians by the Council on Medical Education and Hospitals—Continued

Name and Location of School	Pathologist in Charge	College or University Affiliation	Credit Allowed by Affiliated College or University for Time Spent in Hospital	Entrance Requirements	Duration	Time of Admission	Maximum Enrollment	Tuition	Certificate, Diploma, Degree
MINNESOTA									
St. Luke's Hospital, Duluth.....	A. H. Wells, M.D.	College of St. Scholastica, Duluth	30 semester hrs.	3 yrs. coll.	24 mos. ⁵	July	10	Br. fee	Certificate, Diploma, Degree
St. Mary's Hospital, Duluth.....	J. J. Grabow, M.D.	University of Minnesota, Minneapolis	46 quarter hrs.	3 yrs. coll.	15 mos.	Feb. & July	12	\$75 and \$10 (Br. fee)	Diploma & B. S.
Minneapolis General Hospital, Minneapolis ^b	F. C. Andrus, M.D.	Gustavus Adolphus College, St. Peter	30 semester hrs.	3 yrs. coll. ¹	12 mos.	Every 30 da.	18	None	B. S.
Swedish Hospital, Minneapolis ^b	G. R. Drake, M.D.	University of Minnesota, Minneapolis	46 quarter hrs.	2 yrs. coll.	24 mos. ⁵	July & Sept.	5	\$125 yr.	Certificate & B. S.
University Hospitals, Minneapolis ^a	G. T. Evans, M.D.	University of Minnesota, Minneapolis	46 quarter hrs.	3 yrs. coll.	12 mos.	Varies	43	Univ. fees	B. S.
Aneker Hospital, St. Paul.....	J. F. Noble, M.D.	University of Minnesota, Minneapolis	46 quarter hrs.	3 yrs. coll.	12 mos.	Spring & summer	6	None	B. S.
Charles T. Miller Hospital, St. Paul.....	K. Ikeda, M.D.	Macalester College, St. Paul.....	30 semester hrs.	3 yrs. coll.	12 mos.	July	6	\$120	Certificate & A. B.
MISSISSIPPI									
Vicksburg Sanitarium, Vicksburg ^a	L. S. Lippincott, M.D.	.....	.....	2 yrs. coll.	24 mos.	Varies	5	\$50 (Br. fee)	Certificate
MISSOURI									
Kansas City General Hospital, Kansas City.....	V. B. Bahler, M.D.	.....	.....	2 yrs. coll.	18 mos.	Jan. & July	12	None	Certificate
Memorial Hospital, Kansas City.....	Y. B. Bahler, M.D.	.....	.....	2 yrs. coll.	18 mos.	Jan. & July	12	None	Certificate
Menorah Hospital, Kansas City ^a	R. Korfeschoner, M.D.	.....	.....	Coll. degree	15 mos.	Varies	8	None	None
Research Hospital, Kansas City.....	R. C. Kerr, M.D.	.....	.....	2 yrs. coll.	15 mos.	Every 6 wks.	8	None	None
St. Joseph Hospital, Kansas City.....	E. C. Kerr, M.D.	.....	.....	Coll. degree	15 mos.	Varies	12	\$25 (Br. fee)	Certificate
St. Luke's Hospital, Kansas City.....	E. C. Helwig, M.D.	.....	.....	2 yrs. coll.	15 mos.	Every 2 mos.	7	\$10 (Br. fee)	Diploma
St. Mary's Hospital, Kansas City.....	E. C. Helwig, M.D.	.....	.....	2 yrs. coll.	15 mos.	Every 2 mos.	6	\$10 (Br. fee)	Certificate
Franklin DeRose Hospital, St. Louis ^b	G. O. Brown, M.D.	.....	.....	Coll. degree	12 mos.	June to Sept.	6	None	Certificate
Homer G. Phillips Hospital, St. Louis ^a	S. H. Gray, M.D.	St. Louis University School of Nursing, St. Louis.....	.....	High sch. grad.	5 yrs.	Each semester	12	Univ. fees	B. S.
St. Louis City Hospital, St. Louis.....	S. H. Gray, M.D.	.....	.....	2 yrs. coll.	15 mos.	Varies	3	None	None
Burge Hospital, Springfield ^{a, b}	E. B. Hanan, M.D.	.....	.....	2 yrs. coll.	12 mos.	Quarterly	4	None	None
Murray Hospital, Butte ^a	R. F. Peterson, M.D.	Drury College, Springfield.....	30 semester hrs.	2 yrs. coll.	12 mos.	June	3	\$25 (Br. fee)	Diploma & B. S.
MONTANA									
Columbus Hospital, Great Falls ^{a, b}	T. F. Walker, M.D.	Montana State College, Bozeman, or University of Montana, Missoula.....	45 quarter hrs.	3 yrs. coll.	12 mos.	Varies	3	Univ. fees	B. S.
Montana Deaconess Hospital, Great Falls ^{a, b}	E. D. Hitchcock, M.D.	College of Great Falls, Great Falls	45 quarter hrs.	3 yrs. coll.	12 mos.	June to Sept.	3	None	B. S.
NEBRASKA									
Pryor Memorial Hospital, Lincoln.....	J. M. Neely, M.D.	Montana State College, Bozeman, or University of Montana, Missoula.....	45 quarter hrs.	3 yrs. coll. ¹	12 mos.	Jan. & July	4	None	B. S.
Lincoln General Hospital, Lincoln.....	J. M. Neely, M.D.	.....	.....	2 yrs. coll.	12 mos.	Feb., June & Sept.	3	\$25 (Br. fee)	Diploma
University of Nebraska Hospital, Omaha ^b	J. P. Tollman, M.D.	University of Nebraska College of Medicine, Omaha.....	51 trimester hrs.	2 yrs. coll.	12 mos.	Twice yearly	2	\$50	Diploma
NEW HAMPSHIRE									
Mary Hitchcock Memorial Hospital, Hanover ^a	R. E. Miller, M.D.	.....	.....	2 yrs. coll.	12 mos.	June & Aug.	9	\$75	Certificate
NEW YORK									
Reuben Hyndman Laboratory, Albany ^a	J. J. Ciemmer, M.D.	.....	.....	3 yrs. coll.	12 mos.	Quarterly	6	\$50 (Br. fee)	Certificate
Jewish Hospital, Brooklyn ^a	M. Lederer, M.D.	.....	.....	2 yrs. coll.	12 mos.	Sept.	16	\$300	Certificate
Buffalo General Hospital, Buffalo ^a	K. L. Terplan, M.D.	.....	.....	2 yrs. coll.	12 mos.	Quarterly	6	None	Certificate
Edward J. Meyer Memorial Hospital, Buffalo ^a	D. K. Miller, M.D.	University of Buffalo, Buffalo..	32 semester hrs.	Coll. grad.	14 to 18 mos.	Varies	14	\$50	Certificate
St. Joseph's Hospital, Elkhart ^a	L. F. Beyer, M.D.	.....	.....	2 yrs. coll.	12 mos.	Monthly	10	\$25 (Br. fee)	Certificate
Mary Immaculate Hospital, Jamaica.....	J. M. Pearce, M.D.	.....	.....	2 yrs. coll.	12 mos.	Sept.	6	\$50	Certificate
Rochester General Hospital, Rochester ^a	L. A. Gaspar, M.D.	.....	.....	Coll. degree	12 mos.	Oct.	4	\$35 (Br. fee)	Certificate
Ellis Hospital, Schenectady ^{a, b}	E. Koller, M.D.	Skidmore College, Saratoga Springs	.....	Coll. degree	18 mos.	Varies	12	\$200	Certificate Diploma
Samaritan Hospital, Troy.....	G. H. Klineck, Jr., M.D.	Russell Sage College, Troy.....	30 semester hrs.	2 yrs. coll.	12 to 18 mos.	Spring & fall	10	\$75	Certificate Diploma & B. S.
NORTH CAROLINA									
Duke Hospital, Durham ^{a, b}	D. T. Smith, M.D.	Russell Sage College, Troy.....	.....	3 yrs. coll.	12 mos.	Varies	3	Coll. fees	Certificate
Watts Hospital, Durham.....	C. E. Brown, M.D.	Duke University, Durham.....	None	2 yrs. coll.	18 mos.	July	25	\$75 (Br. and month fees)	Certificate
				2 yrs. coll.	12 mos.	Jan. & July	6	\$25 (Br. fee)	Certificate

OHIO

City Hospital, Akron.....	L. Catron, M.D.....	.....	2 yrs. coll.	12 mos.	July	2	None	Certificate
St. Thomas Hospital, Akron.....	E. J. Christian, M.D.....	.....	2 yrs. coll.	12 mos.	July	2	None	Certificate
Good Samaritan Hospital, Cincinnati ^b	W. M. German, M.D.....	24 semester hrs.	3 yrs. coll.	12 mos.	Sept.	4	\$150	Certificate & R. S.
Mt. Sinai Hospital, Cleveland ^b	B. S. Kline, M.D.....	.....	2 yrs. coll.	12 mos.	June & Sept.	10	\$250 and \$15 (Br. fee)	Certificate & diploma
University Hospitals, Cleveland ^{a, b}	H. Goldblatt, M.D.....	18 semester hrs.	3 yrs. coll. ¹	12 mos.	June, July & Aug.	17	\$100	Certificate & degree
Mt. Carmel Hospital, Columbus ^a	H. B. Davidson, M.D.....	16 semester hrs.	3½ yrs. coll.	12 mos.	Feb. & Sept.	10	Univ. fees	Certificate & degree
Sturling-Loving University Hospital, Columbus ^b	H. L. Reinhart, M.D.....	None	Coll. degree	12 mos.	Quarterly	9	\$160	Certificate
White Cross Hospital, Columbus ^a	R. S. Elder, M.D.....	.....	Coll. degree	12 mos.	Jan. & June	3	None	Certificate
Wurton Road Hospital, East Cleveland.....	E. Goodstitt, M.D.....	.....	2 yrs. coll.	12 mos.	July	4	\$100	Certificate
Jersey Hospital, Toledo ^a	J. B. Rucker, M.D.....	.....	2 yrs. coll.	12 mos.	Jan. & Sept.	4	\$50	Certificate
Toledo Hospital, Toledo ^b	B. Steiberg, M.D.....	29 semester hrs.	3 yrs. coll. ⁴	12 mos.	Feb. & Sept.	8	\$100 and \$10 (Br. fee)	Certificate
Youngstown Hospital, Youngstown.....	G. B. Kramer, M.D.....	.....	2 yrs. coll.	12 mos.	Jan. & Sept.	6	None	Diploma
St. Anthony's Hospital, Oklahoma City.....	H. Jeter, M.D.....	.....	Coll. degree	12 mos.	Varies	5	None	None
University Hospitals, Oklahoma City ^a	H. Jeter, M.D.....	.....	Coll. degree	12 mos.	Varies	6	None	None
OREGON								
Emmanuel Hospital, Portland.....	H. H. Foskett, M.D.....	.....	Coll. degree	12 mos.	Varies	4	\$150	None
Good Samaritan Hospital, Portland.....	C. H. Manlove, M.D.....	.....	2 yrs. coll.	12 mos.	Spring, summer & fall	6	None	None
Portland Sanitarium and Hospital, Portland ^a	W. C. Hunter, M.D.....	.....	2 yrs. coll.	12 mos.	Jan. & June	2	None	Certificate
St. Vincent's Hospital, Portland.....	T. D. Robertson, M.D.....	.....	2 yrs. coll.	12 mos.	Every 4 mos.	4	None	None
University of Oregon Medical School Hospitals and Clinics, Portland ^{a, b}	T. R. Menne, M.D.....	None	2 yrs. coll.	12 mos.	Varies	8	None	None
PENNSYLVANIA								
Abington Memorial Hospital, Abington ^a	J. Eiman, M.D.....	.....	2 yrs. coll.	18 mos.	Every 11 wks.	7	None	None
Allentown Hospital, Allentown ^b	J. J. Wenner, M.D.....	.....	2 yrs. coll.	12 mos.	Varies	4	None	None
Sacred Heart Hospital, Allentown.....	C. B. Reltz, M.D.....	24 semester hrs.	3 yrs. coll.	12 mos.	July & Sept.	3	\$75	Certificate
Rayn Mount Hospital, Bern Mavr ^a	M. M. Strumla, M.D.....	24 semester hrs.	2 yrs. coll.	15 mos.	Quarterly	3	\$120	Certificate
Geo. F. Giesinger Memorial Hospital, Danville ^b	H. F. Hunt, M.D.....	17 semester hrs. (undergraduate)	3½ yrs. coll.	12 mos.	Feb. & July	4	\$378 (coll. & hosp.)	B. S. or M. S.
Elizabeth Mercy Hospital, Darby ^a	P. J. Kennedy, M.D.....	12 semester hrs. (graduate)	Coll. degree	12 mos.	Quarterly	4	\$50 (Br. fee)	Certificate
Easton Hospital, Easton.....	F. O. Zillesen, M.D.....	.....	3 yrs. coll.	12 mos.	July	4	None	B. S.
Harrisburg Hospital, Harrisburg.....	G. R. Moritt, M.D.....	24 semester hrs.	2 yrs. coll.	12 mos.	Every 4 mos.	10	None	Certificate
German Dispensary and Hospital, Philadelphia ^b	F. B. Lynch, Jr., M.D.....	.....	2 yrs. coll.	12 mos.	Oct.	4	\$100	Certificate
Jefferson Medical College Hospital, Philadelphia ^b	C. J. Bucher, M.D.....	.....	2 yrs. coll.	18 mos.	March & Sept.	9	\$100 and \$5 (Br. fee)	Certificate
Lankenau Hospital, Philadelphia.....	S. P. Reimann, M.D.....	.....	2 yrs. coll.	12 mos.	Feb. & Sept.	2	\$50	Certificate
St. Joseph's Hospital, Philadelphia ^a	L. A. Soloff, M.D.....	.....	2 yrs. coll.	12 mos.	June & July	2	\$120 and \$10 (Br. fee)	Certificate
Temple University Hospital, Philadelphia ^{a, b}	F. W. Konzelmann, M.D.....	60 semester hrs.	4 yrs. high sch.	4 yrs.	Monthly	40	\$225 yr. first 2 yrs. \$100 yr. last 2 yrs.	B. S.
Montefiore Hospital, Pittsburgh.....	K. Y. Yarrowman, M.D.....	.....	Coll. degree	12 mos.	July	4	None	Certificate
Reading Hospital, Reading ^b	F. D. Funk, M.D.....	10 to 18 sem. hrs.	3½ yrs. coll.	12 mos.	Sept.	4	\$150	B. S.
St. Joseph's Hospital, Reading.....	G. P. Desjardins, M.D.....	.....	4 yrs. coll.	12 mos.	June	3	\$100	Certificate
Moses Taylor Hospital, Scranton.....	C. L. Yates, M.D.....	.....	2 yrs. coll.	12 mos.	June & Sept.	3	None	Certificate
Scranton State Hospital, Scranton.....	C. Ewen, M.D.....	.....	3 yrs. coll.	12 mos.	July, Aug. & Sept.	3	None	Certificate
Wilkes-Barre General Hospital, Wilkes-Barre.....	W. L. Lanyon, M.D.....	.....	2 yrs. coll.	12 mos.	Summer	4	None	Certificate
TENNESSEE								
Knoxville General Hospital, Knoxville.....	R. H. Monger, M.D.....	.....	2 yrs. coll.	12 mos.	July & Dec.	4	\$10 (Br. fee)	Diploma
John Gaston Hospital, Memphis ^b	H. C. Schmeisser, M.D.....	.....	Coll. degree	13 mos.	Quarterly	4	None	Certificate
St. Joseph Hospital, Memphis.....	T. C. Moss, M.D.....	.....	2 yrs. coll.	15 mos.	Quarterly	6	\$10 (Br. fee)	Certificate
Geo. W. Hubbard Hospital, Nashville ^{a, b}	W. H. Grant, M.D.....	.....	2 yrs. coll.	2 yrs.	Oct.	5	\$100	Certificate
Nashville General Hospital, Nashville ^a	W. A. De Monbreun, M.D.....	2 yrs.	2 yrs. coll.	12 mos.	Jan. & July	2	None	Certificate

Schools Approved for Training Clinical Laboratory Technicians by the Council on Medical Education and Hospitals—Concluded

Name and Location of School	Pathologist in Charge	College or University Affiliation	Credit Allowed by Affiliated College or University for Time Spent in Hospital	Entrance Requirements	Duration	Time of Admission	Maximum Enrollment	Tuition	Certificate, Diploma, Degree
TEXAS									
Hotel Diet Hospital, Beaumont.....	E. Eury, M.D.	Baylor University School of Medicine, Dallas.....	None	2 yrs. coll.	18 mos.	Varies	..	\$10 (Br. fee)	Certificate
Baylor University Hospital, Dallas ^b	J. M. Hill, M.D.	Baylor University, Waco.....	None	2 yrs. coll.	13 mos.	Quarterly	14	\$106	Certificate
Harris Memorial Methodist Hospital, Ft. Worth ^a	J. J. Andujar, M.D.	Texas Christian University, Ft. Worth.....	30 semester hrs.	3 yrs. coll. ¹	12 mos.	June	6	Univ. fees \$50 and Br. fee \$50	B. S. Certificate
John Sealy Hospital, Galveston.....	J. E. Williams, M.D.	.....	.....	2 yrs. coll.	12 mos.	Monthly	20	\$200	Diploma Certificate
Jefferson Davis Hospital, Houston ^a	W. W. Coulter, M.D.	.....	.....	2 yrs. coll.	12 mos.	Varies	12		
Robert B. Green Memorial Hospital, San Antonio ^a	A. W. S. Knittel, M.D.	.....	.....	2 yrs. coll.	12 mos.	.....	7		
UTAH									
Thomas D. Dee Memorial Hospital, Ogden ^a	G. W. Scheelm, M.D.	University of Utah, Salt Lake City.....	45 quarter hrs.	3 yrs. coll.	12 mos.	June	3	Univ. fees	Certificate
Dr. W. H. Groves Latter-Day Saints Hospital, Salt Lake City.....	J. H. Carlquist, M.D.	University of Utah, Salt Lake City.....	45 quarter hrs.	3 yrs. coll.	12 mos.	Jan. & June	3	Univ. & Br. fees	Diploma
Holy Cross Hospital, Salt Lake City ^{a, b}	O. A. Ogilvie, M.D.	University of Utah, Salt Lake City.....	45 quarter hrs.	3 or 4 yrs. coll.	12 mos.	June & Sept.	3	None	None
St. Mark's Hospital, Salt Lake City ^a	O. A. Ogilvie, M.D.	University of Utah, Salt Lake City.....	45 quarter hrs.	3 yrs. coll.	12 mos.	June & Sept.	4	None	None
Salt Lake County General Hosp., Salt Lake City ^{a, b}	O. A. Ogilvie, M.D.	University of Utah, Salt Lake City.....	45 quarter hrs.	3 yrs. coll.	12 mos.	June & Sept.	3	None	None
VIRGINIA									
University of Virginia Hospital, Charlottesville.....	W. E. Bray, M.D.	.....	.....	2 yrs. coll.	12 mos.	Sept.	12	\$50 (Br. fee)	None
Hospital of St. Vincent de Paul, Norfolk ^a	A. F. Strauss, M.D.	.....	.....	2 yrs. coll.	18 mos.	July & Sept.	6	\$150 and \$10 (Br. fee)	Certificate
Medical College of Virginia Hospital Division, Richmond ^b	J. H. Scherer, M.D.	Richmond Professional Institute, Richmond.....	20 semester hrs.	2 yrs. coll.	18 mos.	Varies	10	\$150	Certificate
Stuart Circle Hospital, Richmond.....	R. C. Beck, M.D.	Richmond Professional Institute, Richmond.....	30 semester hrs.	2 yrs. coll. ¹	12 mos.	June, Aug. & Oct.	3	\$10 (Br. fee)	Certificate & B. S.
WASHINGTON									
King County Hospital, Seattle.....	C. R. Jensen, M.D.	Seattle College, Seattle.....	45 quarter hrs.	2 yrs. coll.	12 mos.	Varies	9	\$10 (Library fee)	Certificate
Providence Hospital, Seattle.....	A. L. Balle, M.D.	University of Idaho, Moscow.....	42 quarter hrs.	3 yrs. coll.	12 mos.	Varies	3	None	Degree
Doucens Hospital, Spokane ^a	G. A. C. Snyder, M.D.	State College of Washington, Pullman.....	16 semester hrs.	2 yrs. coll.	12 mos.	July, Aug. & Sept.	3	None	Diploma
Sacred Heart Hospital, Spokane ^a	M. M. Patton, M.D.	.....	.....	2 yrs. coll.	12 mos.	March, July & Sept.	4	None	Certificate
St. Luke's Hospital, Spokane ^{a, b}	R. E. E. Ster, M.D.	Seattle College, Seattle.....	45 quarter hrs.	3 1/2 yrs. coll. ¹	12 mos.	Feb. & Sept.	6	\$10	Diploma
St. Joseph's Hospital, Tacoma ^{a, b}	C. R. McColl, M.D.	Seattle College, Seattle.....	45 quarter hrs.	2 yrs. coll.	18 mos.	Apr. & Sept.	6	\$30 & \$15 (Br. fee)	Diploma
Tacoma General Hospital, Tacoma ^a	C. P. Larson, M.D.	.....	.....	2 yrs. coll.	12 mos.	Jan. & July	6	None	Certificate
WISCONSIN									
St. Francis Hospital, La Crosse.....	W. E. Bayley, M.D.	.....	.....	2 yrs. coll.	18 mos.	Jan. & July	3	None	Certificate
Madison General Hospital, Madison.....	L. McGary, M.D.	.....	.....	Coll. grad.	12 mos.	Oct.	3	None	Certificate
St. Mary's Hospital, Madison ^a	S. B. Pessin, M.D.	St. Mary College, Milwaukee.....	32 semester hrs.	2 yrs. coll.	18 mos.	Jan., June & Sept.	8	\$25	Diploma
State of Wisconsin General Hospital, Madison.....	W. D. Stovall, M.D.	University of Wisconsin, Madison.....	31 semester hrs.	3 yrs. coll.	12 mos.	Sept.	15	\$96	Diploma
Milwaukee Hospital, Milwaukee.....	H. K. B. Algebach, M.D.	.....	.....	9 yrs. coll.	12 mos.	Sept.	15	\$30	Diploma
St. Joseph's Hospital, Milwaukee.....	J. Grill, M.D.	.....	.....	2 yrs. coll.	24 mos.	Sept.	5	None	Certificate
Milwaukee County Hospital, Wauwatosa ^a	J. Grill, M.D.	.....	.....	2 yrs. coll.	24 mos.	July	8	None	Certificate

NOTES

- Male students are admitted.
- Students from other than affiliated colleges and universities are also accepted.
- Students from other than affiliated college must have degree.

- South Bend Medical Laboratory serves as the pathology department for Epworth Hospital and St. Joseph's Hospital, South Bend.
- Bender Hygienic Laboratory serves as the pathology department for the following hospitals: Anthony N. Brady Maternity Hospital, Memorial Hospital and St. Peter's Hospital, Albany; Memorial

Hospital of Greene County, Catskill; Hudson City Hospital, Hudson, and Troy Hospital, Troy.
 4. College graduates and graduate nurses with two years of college are also admitted.
 5. Includes training in x-ray.

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SATURDAY, MARCH 28, 1942

INTERNSHIPS, RESIDENCIES AND FELLOWSHIPS

The annual report of the Council on Medical Education and Hospitals with reference to internships and residencies in specialties appears in this issue of THE JOURNAL. Though the records are based on reports for the calendar year 1941, all hospitals approved by the Council as of March 1, 1942 are included. These total 1,070, of which 438 are approved for internships only, 338 for residencies and 294 for both interns and resident physicians. The 732 hospitals accredited for intern training offer 7,228 internship appointments annually, whereas the 632 residency hospitals provide 2,664 approved residencies, 1,887 assistant residencies and 742 fellowships, as well as 601 general and other services not yet certified by the Council. These hospitals have a significant role in medical education, illustrated by the fact that they are currently engaged in the training of 7,219 interns and 5,756 residents, assistant residents and fellows. This represents the equivalent of two and a half annual graduating classes of all approved medical schools in the United States.

The undergraduate medical curriculum does not offer sufficient training to meet the medical needs of a community. Recent graduates must therefore receive further experience in clinical practice under the guidance of a competent hospital staff. The internship fulfills this purpose and serves to complete the preparation for general practice. It bears an equally important relationship to the graduate field, where it constitutes an essential prerequisite for residency, fellowship and other specialty training that may lead to certification by the American specialty boards. In the broadest sense the internship is part of the fundamental training essential to a career in medicine. The internship provides basic preparation not only for general and special practice but also for administrative medicine, educational pursuits, research and other activities which require a medical background. The preservation of the internship is therefore essential to the maintenance of adequate standards of medical practice. This is fully recognized by the United States Army, the United

States Navy and the Selective Service, which have made provisions whereby interns, medical students and even premedical students who have matriculated in medical schools may secure deferment from active military service until they have completed their undergraduate studies and one year of internship.

According to present indications the number of interns available for hospital service will not be lessened. Indeed, it may be increased because of the accelerated program of medical education adopted by most approved medical schools, which involves the graduation of a class every nine months. The long term internships are now generally being reduced to twelve months in accordance with military needs, but necessity has not been apparent for any further reduction below this point. Hospitals may need to readjust their arrangements for the internship, however, to provide for the appointment of interns at such times as will coincide with the new periods of graduation. The integration of one year internships with the accelerated curriculum of the medical schools presents many difficulties.

Under the present circumstances, hospitals should cooperate to maintain a uniform and equitable distribution of interns in relation to the clinical and educational requirements of the various institutions. Every hospital, therefore, should reexamine its intern program and carefully limit the number of appointments to actual minimum needs.

Though provision has been made for the deferment of medical students and interns, a similar plan has not been developed to provide for the training of young physicians beyond the period of a one year internship. Residencies in specialties will no doubt be greatly curtailed during the present emergency, since the majority of medical graduates will probably be called to military service immediately on completion of the regular intern year. Efforts are being made, however, to maintain the present resident structure at least on a skeleton basis so that the approved hospitals may be able to resume this educational function without delay as soon as conditions again become favorable.

Since the further education of a certain number of physicians is vital to the future welfare of the country, the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association have appointed a committee whose chief purpose is to formulate plans whereby a percentage of interns may be given an opportunity to continue their training in the special fields of medicine.

Efforts are being made by all the agencies concerned to prevent any depreciation in the standards of medical education, hospital service and medical care during the war. The indications are that the needs of the Army, the Navy, public health and the civilian population can be met by scientific planning and complete cooperation without any deterioration in the quality of medical education and medical service.

HOSPITAL SERVICE IN THE UNITED STATES

The statistics published in this issue of *THE JOURNAL* show that there are available in the registered hospitals of the United States 98,136 more hospital beds than were available in 1941. This increase in bed capacity during the past year has been the equivalent of one additional 269 bed hospital for every day of the year, Sundays and holidays included.

The annual census of the registered hospitals just completed by the Council on Medical Education and Hospitals shows a total capacity of 1,324,381 beds and 66,163 bassinets, as of Dec. 31, 1941. There were 11,596,188 patients admitted to these hospitals, 5,201,650 of whom underwent surgical operation.

The number of births in the reporting hospitals was 1,404,940, an increase of 190,448 over the preceding year.

Moreover, the hospitals of this country are functioning more efficiently and more effectively. The average length of stay in general hospitals has been reduced from fourteen days in 1935 to twelve days in 1941. Based on this reduction of two days in the average length of stay, and estimating conservatively the minimum cost per patient day at \$4, the cost of hospitalization for the 10,646,947 patients admitted to the general hospitals of the country was \$85,175,576 less than it would have been in 1935.

The inclusion of statistics with regard to certain nonmedical personnel not previously published emphasizes the enormous problem involved in rendering efficient hospital service to the public.

The hospitals throughout the country have individually and in cooperation with other agencies been formulating programs to meet such emergencies as may arise in connection with the war.

The data submitted suggest that the hospitals of this country have never been in better position to meet successfully such demands as may be made.

THE RECORD KEEPING OF EXEMPT NARCOTIC PREPARATIONS

Physicians who dispense attenuated narcotic preparations, which are exempted from the Harrison Narcotic Act by section 6 of that act, need not keep a record of such drugs if dispensed for a legitimate therapeutic purpose to a patient on whom the physician is in personal attendance. In a recent decision,¹ the United States Supreme Court clarified an apparent ambiguity in the Harrison Narcotic Act. That act, as far as the more potent narcotic drugs are concerned, excuses a physician from keeping records when he dispenses narcotic drugs to patients on whom he is in personal attendance. In the case of the less potent prepara-

tions, however, section 6, after describing the so-called exempt preparations, imposes a duty of record keeping on "any manufacturer, producer, compounder, or vendor (including dispensing physicians) of the preparations and remedies" mentioned in the section. The use of the designation "dispensing physicians" has been construed to impose on a physician who dispenses any of the exempt narcotic preparations to a patient the duty of keeping a record of the transaction. Such an intent on the part of the Congress has been difficult to justify in view of the fact that record keeping is not required of physicians in the case of the potent narcotic drugs.

The present case arose in Hawaii. The defendant was a licensed physician who was prosecuted for failure to keep records of paregoric and certain other exempt preparations which he dispensed to patients. A conviction followed, and the case eventually reached the United States Supreme Court. Justice Murphy, speaking for the court, said that Congress by using the words "dispensing physicians" in connection with the proviso relating to the keeping of records of exempt preparations clearly meant to exclude physicians administering to patients whom they personally attend. In the words of the court:

That not all physicians are required to keep records is manifest from the use of the qualifying adjective "dispensing." And, the physician must be one who manufactures, produces, compounds, or vends, or possibly only one who vends if the parenthetical phrase applies only to "vendor," the drugs. These are not appropriate words to describe the function of a physician who administers exempt preparations to patients whom he personally attends. . . .

The legislative history of the second proviso of section 6 supports the view that the words "dispensing physicians" were intended to apply only to physicians acting as dealers in the sale of drugs.

Justice Murphy called attention to the fact that Congress unequivocally exempted physicians from record keeping where in personal attendance on patients in connection with the use of the more potent narcotics and stated that it was difficult to perceive "why a different requirement should obtain when a physician, under similar circumstances, administers preparations containing only a limited amount of narcotics, such as the paregoric, cough syrup, etc., involved in this case."

One unusual feature of this case was that the government, when the case came before the Supreme Court, agreed with the position taken by the physician and consented to a reversal of the judgment of conviction. In a Memorandum for the United States, filed in the Supreme Court, the attorneys for the government frankly admitted that the provision in section 6 relating to record keeping should not apply to a physician who administers exempt narcotics solely to patients upon whom he personally attends. The language of the requirement, it was pointed out in the memorandum,

imposes the record keeping requirement upon "any manufacturer, producer, compounder, or vendor (including dispensing physicians)." The words "dispensing physicians" in this con-

1. *Peter Young, alias Young Lup, v. United States*, 62 S. Ct. 510, decided Feb. 2, 1942.

nection may be reasonably interpreted as applying only to physicians dispensing to persons other than patients upon whom they personally attend, e. g., country doctors who may act as druggists, physicians who engage in the manufacture and general distribution of patent medicines. An interpretation of the proviso which limits it to this type of situation makes it harmonize with section 2(a) where, in dealing with true narcotics, Congress unequivocally stated its intention to exempt physicians from record keeping when in personal attendance upon patients.

Apparently the Bureau of Narcotics knew nothing of the proceeding that had been instituted against the defendant physician until after the judgment of conviction had been entered. Furthermore, the Acting General Counsel of the Treasury Department, in a letter to the United States Solicitor General in connection with this case, under date of Nov. 29, 1941, expressed the position of the Department of the Treasury, under which the Bureau of Narcotics functions, as in general accord with the construction placed by the defendant physician on the record keeping requirement as far as it relates to "dispensing physicians."

Current Comment

PHYSICIANS FOR THE AIR FORCE

From the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, as indicated elsewhere in this issue, comes a request for physicians in the air force. The Army wants specifically for this purpose two thousand five hundred physicians, who will be commissioned by July 1; it will need six hundred additional physicians each month for the remainder of the calendar year. This alone is a total of six thousand one hundred physicians. Most of those required are to be under 37 years of age. Among the ones certified as specialists in surgery, ophthalmology and neuropsychiatry, more than a thousand are needed between the ages of 37 and 45. The place of the air force in the winning of the war is already clear to every intelligent person. The need is immediate. If you feel you can qualify, write to the Air Surgeon, Army Air Force, Washington, D. C., giving the information that is specified. Everything possible will be done to facilitate immediate commissioning of the applicant in a rank suitable to the place he will occupy.

MEDICAL-PHARMACEUTICAL CONFERENCE

By arrangement of the Board of Trustees of the American Medical Association, representatives of the Council on Pharmacy and Chemistry met on March 8 with a similar committee from the American Pharmaceutical Association to arrange a medical-pharmaceutical conference. The representatives for medicine were Drs. Harold N. Cole, Morris Fishbein, Theodore G. Klumpp, Austin E. Smith and Torald Sollmann. The representatives for pharmacy were Dean B. V. Christensen, Mr. Charles H. Evans, Dr. E. F. Kelly and Dean Robert C. Wilson. It had previ-

ously been decided that the conference should be held concurrently with the special meeting of the U. S. Pharmacopeial Convention, which is to take place in Cleveland on April 7. Thus the function of this informal meeting between representatives of medicine and pharmacy was to arrange a program for the open session, which will be held on April 6 at the Statler Hotel. The program evolved follows:

2 p. m. DEAN TORALD SOLLMANN presiding.

1. Evolution of the Apothecary. HOWARD DITTRICK.
2. Trends of Pharmaceutical Practice. E. F. KELLY.
3. Objectives of the Program of Pharmaceutical Education. DEAN ROBERT C. WILSON.

6:30 p. m. Dinner. DEAN B. V. CHRISTENSEN presiding.

Address: Status of Medicine and Pharmacy In the War and After. MORRIS FISHBEIN.

Discussion of the papers will be opened by speakers prominent in their respective fields as related to medicine and pharmacy. General open discussion is limited to two minutes to each contributor, who may speak but once. Reservations for the dinner may be made with, or tickets procured from, the Committee on Arrangements on the day of the conference. This committee consists of Dean Robert C. Wilson, School of Pharmacy, Georgia, Dr. Austin E. Smith, Acting Secretary of the Council on Pharmacy and Chemistry, and the local Cleveland representative, whose name will be posted on the conference room bulletin board. The conference and dinner (business dress) will be held in the Lattice Room. It is hoped that this conference will be attended not only by those who plan to attend the U. S. Pharmacopeial Convention but by all members of the pharmacal and medical professions who are interested in any aspect of the program.

AMPUTATIONS AND PROSTHESES

The correct site of election for amputation, to assure a serviceable and functional stump, and the mechanics of the prosthesis are among many other subjects considered in a recent publication of the American Medical Association, the "Handbook on Amputations,"¹ sponsored by the Council on Physical Therapy and its group of Consultants on Artificial Limbs. Specialists in the surgery of amputation and experienced artificial limb manufacturers cooperated in this work. The psychology of the patient who has lost a leg or an arm is given special consideration. Amputations in diabetes mellitus and peripheral vascular diseases are described along with postoperative care and physical therapy of the stump. An interesting innovation is the use of ice as a substitute for chemical anesthesia. In emergency, cracked melting ice and a tourniquet may be used in the amputation of a leg or an arm without pain to the patient. Amputations and their associated injuries are grim reminders of the aftermath of war. The Council has rendered a service to medicine by compiling this timely volume.

1. Handbook on Amputations, Chicago, American Medical Association, 1942, price 75 cents.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

WAIVER OF PHYSICAL DEFECTS FOR LIMITED SERVICE OFFICERS

On January 30 the following communication was sent to surgeons in all corps areas and departments except the Philippine Department and to the commanding officers of all general hospitals except Sternberg General Hospital in Manila.

1. In order that the provisions of AG 210.31 (12-19-41)RP-A, Jan. 7, 1942, subject: Waiving of physical defects for limited service officers of the supply arms and services may be carried out in a uniform manner, the following policies of this office concerning recommendations for waiver for limited service are announced:

(a) Considered acceptable for limited service:

(1) Overweight to 25 per cent above average weight for age and height, and underweight to 15 per cent below ideal weight, provided chest x-ray examination is negative for pulmonary pathologic change and other chronic disease is carefully excluded.

(2) Vision 20/400 in each eye corrected with glasses in possession of the examinee to 20/20 in one eye and to at least 20/40 in the other, provided no organic disease of either eye exists.

(3) Blindness, or vision below 20/400, in one eye with vision 20/100 corrected with glasses in possession of the examinee to 20/20 in the other, provided there is no organic disease in the better eye and no history of cataract or other disease in the more defective eye which might be expected to involve the better one, and provided that, in case of ophthalmosteres, the individual is fitted with a satisfactory prosthesis.

(4) Complete color blindness.

(5) Hearing 5/20 in each ear for low conversational voice, or complete deafness in one ear with hearing 10/20 or better in the other, provided the defect is not due to active inflammatory disease and is stationary in character.

(6) Chronic otitis media, inactive, with perforation of membrana tympani, provided there is a trustworthy history of freedom from activity for the preceding five years.

(7) Old fracture of the spine or pelvic bones which has healed without marked deformity, provided there is a trustworthy history of freedom from symptoms during the preceding two years.

(8) Loss of one hand, forearm, or lower extremity below junction of the middle and lower thirds of the thigh, provided the lost member is replaced with a satisfactory prosthesis.

(9) Pes planus, pes cavus or talipes equinus, provided the condition is asymptomatic and does not interfere with normal locomotion.

(10) History of osteomyelitis following fracture, provided x-ray examination indicates complete healing and the condition has been asymptomatic for the preceding five years.

(11) Joints fixed or limited in motion, provided the condition is the result of injury and is nonsymptomatic.

(12) History of excision of torn or detached semilunar cartilage of knee joint, provided there is normal stability of the joint and a period of one year with complete freedom from symptoms has elapsed since the operation.

(13) Residuals of anterior poliomyelitis, without marked deformity or loss of function, originating two years or more prior to examination.

(14) Varicose veins, moderate, without edema or discoloration of skin.

(15) History of gastric or duodenal ulcer, provided there is a trustworthy history of freedom from activity during the preceding five years and provided a gastrointestinal roentgenogram at the time of examination is negative.

(16) Incomplete inguinal hernia.

(17) Small asymptomatic congenital umbilical hernia.

(18) Absence of one kidney, provided its removal has been necessitated by other than tuberculosis or malignancy and the other kidney is normal.

(b) Considered unacceptable for any service:

(1) History of malignant disease within preceding five years.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

Information from Major Sam F. Seeley, Executive Officer of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians, 601 Pennsylvania Avenue, Washington, D. C., states that a request has just been received by that office from the Army Air Force for two thousand five hundred physicians to be commissioned by July 1 and for six hundred physicians to be commissioned each month thereafter for the period of 1942. The total is six thousand one hundred physicians needed this year to provide adequate medical care for the Air Force. The place of the Air Force in the winning of the war is already apparent to every one.

QUALIFICATIONS

Eighty per cent of the physicians to be commissioned must be under 37 years of age. The remaining 20 per cent may be between the ages of 37 and 45 years. Those in the older age group must be qualified by certification as specialists preferably in the fields of surgery, ophthalmology and neuropsychiatry.

The letter of application should state the age of the applicant and the school of graduation and should indicate that he believes himself qualified physically and professionally for a commission.

All names are cleared through the Procurement and Assignment Service.

The letter, requesting application forms, should be sent to the Air Surgeon, Army Air Force, Washington, D. C.

(2) Active tuberculosis of any organ and inactive pulmonary tuberculosis except as described in paragraph 2a.

(3) Syphilis, except adequately treated syphilis as described in paragraph 2b.

(4) Old fracture of the skull with bony defect greater than 2 cm. in longest diameter or with history of accompanying mental or neurologic complications.

(5) Instability of any of the major joints.

(6) History of metastatic osteomyelitis with prolonged or recurrent drainage, regardless of duration.

(7) Arthritis of the atrophic (rheumatoid) type.

(8) Any cardiovascular condition which disqualifies for general military service.

(9) History of gastroenterostomy, gastric resection, intestinal anastomosis or operation for intestinal obstruction.

(10) History of prostatectomy or transurethral resection of the prostate, or of prostatic hypertrophy of any degree.

(11) Chronic endocrine disease except mild hypothyroidism or mild Froehlich's syndrome.

(12) Diabetes mellitus of any degree or renal glycosuria.

(13) History of any psychosis.

(14) History of severe psychoneurosis at any time, or psychoneurosis of any degree if it has been recurrent or has shown symptoms within the preceding five years.

2. The following may be recommended for general military service with waiver:

(a) Individuals with minimal inactive lesions of primary or reinfection type pulmonary tuberculosis. These lesions may consist of:

(1) Calcified residues of lesions of the intrathoracic lymph nodes, provided none of these exceed an arbitrary limit of 1.5 cm. in diameter and the total number does not exceed five.

(2) Calcified lesions of the pulmonary parenchyma, provided the total number does not exceed ten, one of which may equal but not exceed 1 cm. in diameter, but none of the remainder may exceed 0.5 cm. in diameter.

(NOTE.—The lesions described in (1) and (2) should appear sharply circumscribed, homogeneous and dense. Measurements refer to standard 14 by 17 inch direct projection roentgenograms.)

(3) Small fibrotic parenchymal lesions represented in the roentgenogram as sharply demarcated strandlike or well defined small nodular shadows not exceeding a total area of 5 sq. cm., provided acceptance is deferred until subsequent examination demonstrates that the lesions are stationary and are not likely to be reactivated. The minimum period of time to determine this is six months. It must be recognized that either progression or regression of the lesions indicates activity.

(b) Individuals with confirmed positive serologic tests for syphilis with no clinical evidence of the disease, with convincing histories of a trustworthy diagnosis of syphilis, or with reliable histories of treatment for the disease on serologic or clinical grounds; provided:

(1) That a negative spinal fluid since infection and treatment has been reported from a trustworthy source;

(2) That, in infections estimated to be of less than four years' duration, at least thirty to forty arsenical and forty to sixty insoluble bismuth injections or their equivalent, with a minimum total of seventy-five injections, have been given, with approxi-

mate continuity (no rest periods or lapses) during the first thirty weeks of treatment; and

(3) That, except as further qualified, in infections estimated to be over four years' duration, at least twenty arsenical injections and forty to sixty insoluble bismuth injections or their equivalent, with a minimum total of sixty injections, have been given in alternating courses; rest periods between consecutive courses not exceeding eight weeks being allowable.

In infections of unknown duration it shall be presumed for classification purposes that those of individuals under 26 years of age are of less than four years' duration, and over 26 years, of more than four years' duration.

(NOTE.—For the determination of treatment, the signed statement of acceptable treatment sources administering it, with total number of doses of each drug and approximate calendar dates of administration and available laboratory and clinical data, shall be required as evidence.)

(c) Overweight to 20 per cent above average weight for age and height, and underweight to 12.5 per cent below ideal weight, provided a chest roentgenogram is negative for pulmonary pathologic changes and other chronic disease is carefully excluded.

(d) Insufficient incisor or masticating teeth, provided the mouth is free from extensive infectious processes and the examinee is wearing satisfactory dentures.

(e) Pilonidal cyst or sinus, provided there is no palpable tumor mass, no evidence of purulent or serous discharge, and no history of previous discharge or inflammation.

(f) History of healed fracture with bone plates, screws or wires used for fixation of fragments still in situ, provided x-ray examination shows no evidence of osteomyelitis and no rarefaction of bone contiguous to the fixative materials; that such fixative materials are not so located that they will be subjected to pressure from military clothing or equipment, and that one year has elapsed since their application.

(g) History of operation or of injection treatment for inguinal or small ventral hernia, provided examination three months or more following operation, or following the last injection, shows a satisfactory result.

(h) History of unilateral renal calculus, provided the condition has been asymptomatic for the preceding three years, urine examination is negative, and roentgenologic examination (flat plate) of both kidneys is negative.

(i) Absence of the spleen, provided its removal has been necessitated by a crushing injury.

(j) History of cholecystectomy, provided the condition has been asymptomatic for the preceding two years.

3. The action of the reviewing medical authority should indicate on the Report of Physical Examination, W. D., A. G. O. Form No. 63, that cognizance has been taken of any defects which do not meet the standards set forth in AR 40-105, but for which waiver is recommended by a notation as follows:

"Recommend acceptance for general military service with waiver of (here record the defect or defects)," or

"Recommend acceptance for limited service only with waiver of (here record the defect or defects)."

By order of the Surgeon General:

JOHN A. ROGERS,
Lieutenant Colonel, Medical Corps,
Executive Officer.

OFFICE OF CIVILIAN DEFENSE WILL AID ESTABLISHMENT OF BLOOD AND PLASMA BANKS

Hospitals in communities which are exposed to war hazards may receive assistance in the establishment of a blood and plasma bank through funds available to the United States Public Health Service. These will be administered by it through the Medical Division of the United States Office of Civilian Defense. In addition to providing whole blood or liquid plasma for the current needs of hospitals, these blood banks as well as others already in operation are to accumulate a reserve supply of plasma for civilian casualties caused by enemy action. Technical and bacteriologic safeguards are to be observed as recommended

by the Subcommittee on Blood Substitutes of the Division of Medical Sciences of the National Research Council. At the request of the Office of Civilian Defense, a technical handbook on blood and plasma banks has been prepared by this committee, which will be distributed by the Office of Civilian Defense to hospitals.

Following the advice of the committee of the National Research Council, financial and technical assistance will be provided only to three hundred hospitals of two hundred or more beds approved by the American College of Surgeons and the

Hospital Register of the American Medical Association. These hospitals will agree to maintain required technical standards and to accumulate a surplus of liquid or frozen plasma amounting to one unit per bed within three months. Grants will be made only for the purchase of essential equipment if obtainable locally and for sufficient technical assistance to initiate the project. Hospitals will thereafter be expected to continue to maintain the blood and plasma bank to meet their daily needs as well as the plasma reserve for civilian casualties.

Technical guidance has also been made available through the appointment of Dr. John B. Alsever of Syracuse, N. Y., by the Surgeon General of the U. S. Public Health Service, and his assignment to the medical division of the Office of Civilian Defense as technical director of its blood and plasma service. Dr. Alsever will be assisted by regional technical consultants

in various parts of the country, whose consulting services will be made available to hospitals in their area.

As a further safeguard for the civilian population, the United States Public Health Service is providing for the production of 50,000 units of dried plasma or human albumin in laboratories approved for the manufacture of biologic products by the National Institute of Health. The American Red Cross has agreed to collect the blood for this purpose without interference with its blood collecting services for the armed forces. This second reserve of dried plasma will be distributed to Office of Civilian Defense depots located in various parts of the country. It will be made available by the medical division of the Office of Civilian Defense to stricken communities for their casualties whenever their own local stores of liquid or frozen plasma are in danger of being depleted.

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Report of a Meeting of the Council on Medical Education and Hospitals, held in Chicago, Feb. 15, 1942

RESOLUTION ON THE DEATH OF DR. W. D. CUTTER

The members of the Council, in expressing their deep regret in the loss of Dr. William D. Cutter, Secretary of the Council on Medical Education and Hospitals from Dec. 1, 1931 until his death on Jan. 22, 1942, passed the following resolution by unanimous action:

In the demise of William D. Cutter, M.D., the Council on Medical Education and Hospitals lost a valuable secretary and organized medicine a true friend.

Dr. Cutter's services to scientific teaching, his life-time devotion to medical education, his unwavering faith in the destiny of American medicine and his career as a medical educator made a splendid contribution to the work of the Council.

His character and ideals, happily combined with high ethical values, will long be remembered and cherished.

The members of the Council desire to record their appreciation and gratitude for his splendid services and to express their great personal loss in his death.

The Council sponsored a meeting in the Assembly Hall of the Association headquarters on Monday evening, February 16, to honor the memory of Dr. Cutter. The speakers were Dr. Ray Lyman Wilbur, Stanford University, Calif., whose address was entitled "Cutter, the Medical Administrator"; Dr. Charles Gordon Heyd, New York, who spoke on "Cutter, the Medical Educator," and Alphonse M. Schwitalla, S.J., St. Louis, who spoke on "Cutter, the Man." Dr. Wilbur, who presided, read letters of tribute sent from all parts of the country.

APPOINTMENT OF DR. WEISKOTTEN

The Council voted to recommend to the Board of Trustees of the American Medical Association that Dr. Herman G. Weiskotten, a member of the Council on Medical Education and Hospitals and dean of Syracuse University College of Medicine, be appointed Secretary of the Council for at least a period of one year. The Council agreed to propose to the Trustees that Dr. Weiskotten spend three quarters of his time acting as Secretary of the Council and the remainder in the service of his medical school.

The Board of Trustees, meeting on Wednesday, February 18, agreed to this plan.

SPEEDING THE PRODUCTION OF PHYSICIANS TO MEET THE WAR NEEDS

The resolution adopted by the Council on this subject was published in THE JOURNAL, February 28, page 751.

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE

The resolution on this subject was published in THE JOURNAL, February 28, page 751.

UNIVERSITY OF TEXAS MEDICAL BRANCH

It was agreed to accept the invitation to visit the University of Texas Medical Branch as soon as practicable.

ECLECTIC MEDICAL COLLEGE OF CINCINNATI

The Council wishes to report the complete dissolution of the Eclectic Medical College by the Secretary of State of Ohio and the removal of such inhibitions which it has made concerning the recent graduates of this medical college.

REVISION OF ESSENTIALS OF AN APPROVED INTERNSHIP

A resolution was adopted that the revision of the Essentials of an Approved Internship by a subcommittee of the Council be approved and presented to the House of Delegates of the American Medical Association at its next session for ratification.

INSPECTION OF HEALTH RESORTS

At the suggestion of the Board of Trustees of the American Medical Association, Dr. W. W. Bauer, representing the Association's Committee on American Health Resorts, submitted a memorandum requesting the Council on Medical Education and Hospitals to cause its field inspectors to make inspections of health resorts. The Council agreed to sample some of these institutions by visitation and report at the next session of the House of Delegates if such a program can be adopted by the Council. It was the sentiment of the Council that, if it is to take on new duties in this connection, such inspections shall be in consonance with the usual procedure of the Council.

SCARCITY OF INTERNS

With regard to the problem presented by the scarcity of interns and residents, it was suggested that the staff of the Council continue to advise hospitals to conserve the doctor's time for the purely professional clinical work in the hospital and have technical help perform nonprofessional services.

HOSPITAL WORK OF THE COUNCIL

A summary of the work of the Hospital Division of the Council for the year 1941 was presented.

REVISION OF MANUAL OF ESSENTIALS OF GOOD HOSPITAL NURSING SERVICE

The Council participated in a revision of the Manual of the Essentials of Good Hospital Nursing Service, serving with other organizations as a joint committee. The manual under discussion had originally been prepared by the American Hospital Association and the National League of Nursing Education. Other organizations having members on the Joint Committee,

in addition to the Council on Medical Education and Hospitals and the two agencies named, were the American College of Surgeons and the American Nurses' Association. The revision of the manual has been completed.

PREPARATION OF NURSES FOR NATIONAL DEFENSE

The Council was represented at a conference in New York on January 26 and 27, called by the American Council on Education at the request of the National League of Nursing Education and the Association of Collegiate Schools of Nursing. The purpose of the conference was to consider what colleges and universities can do to assist in the preparation of nurses, especially for national defense. Recommendations were formulated regarding preclinical programs, guidance policies and materials, and relative to basic professional programs.

CONTINUATION COURSES

It was announced that the next quarterly publication of opportunities for continuation courses for practicing physicians is scheduled for publication in *THE JOURNAL* sometime in April.

CERTIFYING INTERN SERVICES

A resolution was adopted that the Council continue its present policy of not in any way certifying intern services in institutions which it has no possibility of inspecting.

INSURING CONTINUOUS SUPPLY OF MEDICAL SPECIALISTS

A joint meeting of the Council on Medical Education and Hospitals and the Advisory Board for Medical Specialties was held on February 15. During this meeting the necessity for insuring a continuous supply of adequately trained medical specialists for the Army, Navy, other government services and the civilian needs was clearly recognized, particularly in those fields in which there is a shortage of personnel and a lack of sufficient opportunities for training at the present time. It was felt that a reasonable number of qualified recent graduates should be selected and permitted to continue advanced training under proper auspices. For this purpose a joint committee of the two organizations was appointed consisting of Dr. Robin C. Buerki, Philadelphia; Dr. B. R. Kirklin, Rochester, Minn.; Dr. C. Guy Lane, Boston, representing the Advisory Board for Medical Specialties, and Dr. Reginald Fitz, Boston, Dr. Charles Gordon Heyd, New York, and Dr. H. G. Weiskotten, Chicago, representing the Council on Medical Education and Hospitals.

INVITATION TO INSPECT MEDICAL SCHOOL IN HAITI

Dr. Camille Liérissin, professor in the Faculté de médecine, Port-au-Prince, Haiti, appeared before the Council and invited the American Medical Association to inspect the medical school in Haiti and offered to the medical profession in the United States opportunities for study and research in tropical diseases with suitable accommodations and facilities for work. It was a pleasure to receive Dr. Liérissin, and his visit contributed much to the cultural relationships of the two republics.

CONFERENCE WITH REPRESENTATIVES OF ASSOCIATION OF AMERICAN MEDICAL COLLEGES

A conference was held on February 18 with members of the Executive Council of the Association of American Medical Colleges and the Board of Trustees of the American Medical Association at which problems of mutual interest were discussed. A joint committee was appointed to decide on matters of policy and to make recommendations to the Council and the Association of American Medical Colleges. The committee consists of Dr. A. C. Bachmeyer, Chicago; Dr. Fred C. Zapffe, Chicago, and Dr. E. M. MacEwen, Iowa City, representing the Association of American Medical Colleges, and Dr. Reginald Fitz, Boston; Dr. Charles Gordon Heyd, New York, and Dr. Herman G. Weiskotten, Chicago, representing the Council on Medical Education and Hospitals.

HOSPITALS APPROVED FOR INTERN TRAINING, RESIDENCIES AND FELLOWSHIPS AND TECHNICAL SCHOOLS APPROVED

The Council on Medical Education and Hospitals at this meeting took action as follows regarding hospitals for intern training and for residencies and fellowships, as well as schools for the training of Clinical Laboratory and Physical Therapy Technicians:

Hospitals Approved for Intern Training

St. Joseph's Hospital, San Francisco.
Mercy Hospital, Council Bluffs, Iowa.
Yonkers General Hospital, Yonkers, N. Y.
Cleveland Clinic Foundation Hospital, Cleveland.
Hillcrest Memorial Hospital, Tulsa, Okla.

Approved Residencies and Fellowships

Anesthesiology

University of California Hospitals, San Francisco
Hospital of the University of Pennsylvania, Philadelphia.

Dermatology and Syphilology

Stanford University Hospitals, San Francisco
Charity Hospital, New Orleans
Buffalo General Hospital, Buffalo.

Mixed

Bristol Hospital, Bristol, Conn.
Tewksbury State Hospital and Infirmary, Tewksbury, Mass.
Alexian Brothers Hospital, St. Louis.
Shelburne Arms Hospital, Richmond, Va.

Neurology

George Washington University Hospital, Washington, D. C.

Psychiatry

Mount Zion Hospital, San Francisco
Norwich State Hospital, Norwich, Conn.
Chicago State Hospital, Chicago.
St. Luke's Hospital, Chicago.
Manteno State Hospital, Manteno, Ill.
Peoria State Hospital, Peoria, Ill.
Kalamazoo State Hospital, Kalamazoo, Mich.
Kansas City General Hospital No. 1, Kansas City, Mo.
New Jersey State Hospital, Trenton, N. J.
Pilgrim State Hospital, Brentwood, N. Y.
Harlem Valley State Hospital, Wingdale, N. Y.
Massillon State Hospital, Massillon, Ohio.

Obstetrics

St. Joseph's Hospital, Chicago
City Hospital, Akron, Ohio.

Obstetrics and Gynecology

St. Francis Hospital, Peoria, Ill.

Ophthalmology and Otolaryngology

St. Luke's Hospital, Chicago.

Otolaryngology

University of Kansas Hospitals, Kansas City, Kan.
Jefferson Davis Hospital, Houston, Texas.

Pediatrics

Trinity Hospital, Minot, N. D.

Radiology

Newark Beth Israel Hospital, Newark, N. J.
Good Samaritan Hospital, Portland, Ore.
Jewish Hospital, Philadelphia.

Surgery

St. Francis Hospital, Peoria, Ill.
St. Mary's Hospital, Detroit.
St. Luke's Hospital, Kansas City, Mo.
Peoples Hospital, Akron, Ohio.
Fairview Park Hospital, Cleveland.
Sacred Heart Hospital, Allentown, Pa.
Hermann Hospital, Houston, Texas.
Jefferson Davis Hospital, Houston, Texas.

Schools for Clinical Laboratory Technicians Approved

St. Joseph's Hospital, Phoenix, Ariz.
George Washington University and Hospital, Washington, D. C.
Providence Hospital, Washington, D. C.
St. Bernard's Hospital, Chicago
Norton Memorial Infirmary, Louisville, Ky.
Charity Hospital, New Orleans.
Shreveport Charity Hospital, Shreveport, La.
Burge Hospital, Springfield, Mo.
St. Joseph's Hospital, Elmira, N. Y.
St. Joseph's Hospital, Reading, Pa.
St. Joseph's Hospital, Memphis, Tenn.
Jefferson Davis Hospital, Houston, Texas.

School for Physical Therapy Technicians Approved

University of Minnesota, Minneapolis.

H. G. WEISKOTTEN, M.D., Secretary.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ILLINOIS

Dental Correction Program Inaugurated.—The state department of health has announced a program in defense areas to correct dental defects on young children whose parents cannot afford to pay for the work. The program has the cooperation of the Illinois State Dental Society and the U. S. Children's Bureau. Educational programs will be carried out and as far as resources will permit, costs of dental care for "dentally indigent children" will be made from state funds, local funds or both.

Chicago

All Expense Tour to Federation Meeting.—Dr. Arno B. Luckhardt of the University of Chicago announces an all expense tour for Chicago physicians to the annual meeting of the Federation of American Societies for Experimental Biology in Boston, March 31-April 4. Additional information may be obtained from Dr. Luckhardt by calling the University of Chicago, Midway 0800, local 320. An announcement concerning the meeting appears in this issue of *THE JOURNAL* under General News, page 1153.

Capps Prize Awarded.—Dr. Arnold Lazarow has been given the Joseph A. Capps Prize in Medical Research for 1941 for his study on "Particulate Glycogen: A Submicroscopic Component of the Guinea Pig Liver Cell; Its Significance in Glycogen Storage and the Regulation of Blood Sugar," according to an announcement from the Institute of Medicine. Dr. Lazarow graduated at the University of Chicago School of Medicine in 1941. The Capps Prize is given to a young physician for the most meritorious investigation in medicine or in the specialties of medicine.

INDIANA

Tristate Meeting.—The Northern Tri-State Medical Association will hold its sixty-ninth annual meeting at Fort Wayne on April 7 with sessions in the Chamber of Commerce Building. The Allen County Medical Society will act as host, and headquarters will be the Hotel Keenan. The following will participate:

- Dr. Claire L. Straith, Detroit, Treatment of Facial Injuries and Deformities.
- Dr. Irvine H. Page, Indianapolis, Nature and Experimental Treatment of Hypertension.
- Dr. Paul Starr, Chicago, Clinical Studies of the Pituitary Factor in Patients with Thyroid Disease.
- Dr. Nicholson J. Eastman, Baltimore, Breech Presentation and Problems Associated Therewith.
- Dr. Paul B. Magnuson, Chicago, Surgical Treatment of Arthritis.
- Dr. Frederick F. Yonkman, Detroit, Sulfur Derivatives.
- Dr. Jonathan Forman, Columbus, Ohio, Importance of Allergy in General Practice.
- Dr. Beveridge H. Moore, Chicago, the A B C of Orthopedics.
- Dr. Arthur H. Parmelee, Chicago, Bone Growth in Early Infancy.
- Dr. William S. Keller, Glendale, Ohio, Civilian Defense and the Doctor.

IOWA

Graduate Lectures.—The Polk County Medical Society, Des Moines, sponsored two graduate lectures, March 13, at the Yonkers Tea Room, Des Moines. Dr. Elexious T. Bell, Minneapolis, discussed "Kidney Disease" and Dr. Charles Anderson Aldrich, Winnetka, Ill., "Treatment of Chronic Nephritis and Nephrosis."

Annual Pediatric Session.—The Iowa State Pediatric Society will hold its annual meeting at the Hotel Fort Des Moines on April 14. The following program will be presented:

- Dr. Mark L. Floyd, Iowa City, Neuritis.
- Dr. Robert O. Hughes, Ottumwa, Medical Treatment of Pyloric Spasm and Pyloric Stenosis.
- Dr. Charlotte Fisk, Des Moines, Fluid Therapy in Pediatrics.
- Dr. Robert H. McBride, Sioux City, Scurvy.
- Dr. Martin D. Ott, Davenport, Pediatrics, Past and Present.
- Dr. Philip C. Jeans, Iowa City, Metabolic Changes in Adolescence.
- Dr. James E. Dyson, Des Moines, Kenny Treatment of Acute Poliomyelitis.
- Dr. Dennis H. Kelly, Des Moines, Extensions from the Primary Complex in Tuberculosis.
- Dr. John A. Toomey, Cleveland, Newer Prophylactic Measures.

In the evening Dr. Toomey will address the banquet session on "Pathogenesis and Treatment of Poliomyelitis."

MARYLAND

Professor Hegner Dies.—Robert W. Hegner, Ph.D., since 1922 professor of protozoology of the Johns Hopkins University School of Hygiene and Public Health, Baltimore, died, March 11, aged 62. Dr. Hegner was born in Decorah, Iowa, in 1880. He received his Ph.D. degree at the University of Wisconsin, Madison, in 1908. For a time he served as an assistant zoologist at the University of Chicago, professor of biology at the Wisconsin State Normal School, River Falls, Wis., and assistant zoologist at the University of Wisconsin. He was on the staff of the University of Michigan, Ann Arbor, Mich., from 1908 to 1918, when he joined Johns Hopkins as an associate. He was associate professor in charge of the department of medical zoology there from 1920 to 1922, when he became professor of protozoology. In 1926 Dr. Hegner once served as exchange professor with the London School of Hygiene and Tropical Medicine and in 1929 visiting professor at the school of hygiene and public health, University of Philippines. He was a member of many scientific societies, including the American Society of Tropical Medicine and the Academy of Tropical Medicine, serving as president of the American Society of Parasitology in 1936.

MASSACHUSETTS

The Howe Lecture of Ophthalmology.—Marion Hines, Ph.D., associate professor of anatomy, Johns Hopkins University School of Medicine, Baltimore, gave the Howe Lecture of Ophthalmology at Harvard Medical School, Boston, on March 17. His subject was "Recent Contribution to the Localization of Vision Within the Central Nervous System." The lecture is given under the auspices of the Howe Laboratory of Ophthalmology at Harvard.

Forty Years' Service with Health Board.—Dr. Frank L. Morse, Somerville, has retired after forty years' service with the Somerville Board of Health. According to the *New England Journal of Medicine* Dr. Morse was medical and sanitary inspector of the Massachusetts Board of Health from 1898 to 1905 and a district health officer from 1909 to 1915. From 1901 until his retirement from the Somerville board he had been in charge of the bacteriologic laboratory, the contagious disease hospital, contagious disease control and all other medical work of the board. He was discharged from active service in the U. S. Army in 1919 with the rank of lieutenant colonel and was retired from the Officers Reserve Corps in 1935 with the rank of colonel. He graduated at Harvard Medical School in 1894.

MICHIGAN

Society News.—Dr. Austin E. Smith, Acting Director, Council on Pharmacy and Chemistry, American Medical Association, Chicago, addressed the medical section meeting of the Wayne County Medical Society with the Detroit Retail Druggists Association in Detroit, March 9, on "The Role of the Physician, Pharmacist and Government in the Control of Drugs."

MINNESOTA

Abortionist Sentenced.—Millie Meyer, Duluth, was sentenced on February 11 to a term of not to exceed four years at hard labor in the Women's Reformatory at Shakopee, following a conviction by a jury of the crime of abortion. Mrs. Meyer was arrested on January 15, the preliminary hearing was held on January 22, and the trial started on February 3.

Course in Roentgenology of the Head and Neck.—The Center for Continuation Study of the University of Minnesota, Minneapolis, will conduct a course on roentgenology of the head and neck, March 30-April 1. Members of the medical school faculty are assisting in the course. Registrants are invited to attend the meeting of the Minnesota Radiological Society at the Mayo Clinic, Rochester, March 28, for a dinner and evening program. A special course in roentgenology of the teeth will be given on April 2 if a sufficient number of roentgenologists register.

NEBRASKA

New Health Units.—The Nebraska State Department of Health has established three new health units in defense areas: Cass-Sarpy County, Douglas County, including the city of Omaha, and Dodge-Saunders County. These units are established in connection with either army or defense production, and the personnel consists of medical officer, engineer, sanitarian and six nurses.

Society News.—The Omaha-Douglas County Medical Society will be addressed, April 14, among others, by Dr. James Dewey Bisgard, Omaha, on "Sarcoma of the Duodenum." The society devoted its February 24 meeting to a symposium on heart disease at which the speakers were Drs. Frederick W. Niehaus, Raymond L. Traynor, Augustus David Cloyd, Howard B. Hunt and Michael William Barry.

NEW YORK

Lecturer on Rheumatic Fever.—The Medical Society of the State of New York and the state department of health have arranged a special lecture on rheumatic fever for the Steuben County Medical Society to be given at Corning, April 9. Dr. Norman S. Moore, Ithaca, will be the speaker.

Milk Borne Outbreak of Septic Sore Throat.—*Health News* reports an outbreak of septic sore throat in Suffolk County, traced to a milk handler who was suffering from sore throat. All the persons affected in the outbreak were patrons of one milk producer and dealer who sold the greater part of his supply as raw milk. Only those who drank the raw milk became ill. The milk handler was sick nine days before the beginning of the outbreak. He carried on his duties, cleaning the cattle for milking, transporting cans of milk, washing bottles and assisting in bottling the milk. One of the cows sustained an udder injury, and this milk handler took care of the cow's injury. Strains of hemolytic streptococci belonging to Lance-have arranged a special lecture on rheumatic fever for the Steuben County Medical Society to be given at Corning, April 9. Dr. Norman S. Moore, Ithaca, will be the speaker.

New York City

Graduate Course.—Columbia University announces a short course in practical oral pathology, April 1-29. The course will consist of lectures, discussions and demonstrations and is open to qualified graduates in dentistry or medicine.

Ship's Doctor Missing.—Dr. Ralph M. Whithead, for more than thirty-five years ship's doctor on various boats, has been reported missing following the torpedoing of a ship in the Caribbean, March 6, according to the *Chicago Tribune*. Dr. Whithead graduated at the University of Illinois College of Medicine, Chicago, in 1890. He is 75 years of age.

Dr. Rappleye Resigns as Commissioner of Hospitals.—Dr. Willard C. Rappleye, since Oct. 1, 1940 commissioner of hospitals, has resigned to return to his activities as dean of Columbia University College of Physicians and Surgeons. At the time of his appointment, Dr. Rappleye was granted a fifteen months leave of absence from his deanship. He succeeded Dr. Sigismund S. Goldwater, who resigned to devote his full time as head of Associated Hospital Service.

Psychology Laboratory Observes Fiftieth Anniversary.—The fiftieth anniversary of the founding of the laboratory of psychology of Columbia University was celebrated at a dinner meeting on February 12. Dr. McKen Cattell, since 1936 associate professor of pharmacology in charge of the department, Cornell University Medical College, was the guest. Dr. Cattell established the laboratory in 1891. Albert T. Poffenberger Jr., Ph.D., executive officer of the department of psychology at Columbia, presided at the dinner, and addresses were made by Nicholas Murray Butler, LL.D., president of the university; Edward L. Thorndike, LL.D., director, division of psychology, Institute of Educational Research, Teachers College at Columbia; Robert S. Woodworth, Ph.D., professor of psychology at the school, and Dr. Cattell.

Visiting Professorships Established.—The Long Island College of Medicine, Brooklyn, has established a series of visiting professorships under a grant from the Commonwealth Fund of \$4,500 a year for three years. On the concept that all departmental heads have phases of their teaching program they would like to strengthen, the college is inviting scholars from other institutions for short periods to make specific contributions to the curriculum, according to an announcement. Dr. Thomas Addis, professor of medicine, Stanford University School of Medicine, San Francisco, is the first visitor under the new plan and started his six weeks affiliation with the school on March 16 as the guest of Dr. Tasker Howard, professor of medicine. Dr. Wilson G. Smilie and members of his staff at Cornell University Medical College have accepted the invitation of Dr. Wade W. Oliver, professor of bacteriology, to give the spring trimester course in parasitology and tropical medicine to the second and third year classes.

Hospital Unit Dedicated.—Ceremonies on January 4 marked the dedication of a new nine story building constructed as the major part of a \$1,300,000 modernization program at St. Vincent's Hospital, New York. The new unit adds one hundred and twenty-four beds to the existing four hundred and seventy beds of the hospital. The fourth, fifth and sixth stories are set aside for the maternity department. The ninth story is divided into two parts, the front containing two operating rooms with adjoining sterilizing, doctors' wash-up and anestheticizing rooms. The rear portion of the ninth story contains a complete delivery department, having three delivery rooms together with labor rooms and the necessary utilities. Above the ninth story is provided a roof pavilion for outdoor treatment together with a large solarium. St. Vincent's Hospital was established ninety-two years ago, expanding from thirty beds in 1849 to its present approximate capacity of six hundred beds. At a dinner on January 12 a campaign was launched to raise \$750,000 to cover part of the cost of the modernization program at the hospital.

OKLAHOMA

Personal.—Dr. Lewis L. Recse has resigned as medical director of the State University and Crippled Children's hospitals, Oklahoma City, and has been succeeded by Dr. George N. Barry, Oklahoma City, as acting medical director.—The University of Oklahoma School of Medicine closed for a time on December 4 as a tribute to Dr. Richard C. Lowry, professor of clinical obstetrics, who died suddenly, December 2.

PENNSYLVANIA

Dr. Daugherty Wins Seibert Award.—The Harrisburg Academy of Medicine recently presented the Seibert Memorial Award for 1941 to Dr. John Arthur Daugherty, Harrisburg, now president of the Dauphin County Medical Society. The award is granted every two years to the member of the Harrisburg Academy of Medicine, under 45 years of age, who, in the opinion of the committee, has done most to advance the practice of medicine in the community. Dr. Daugherty was for five years secretary of the Dauphin County Medical Society and business manager of the *Academician*. In 1936 he was largely instrumental in organizing the Physicians' and Dentists' Bureau for the benefit of the professions, which led to the forming of the Capital Hospital Service, of which he later served as secretary. The award of \$500 for graduate study was established as a memorial to the late Dr. William Henry Seibert, Steelton.

Philadelphia

Scarlet Fever Outbreak.—Forty-three new cases of scarlet fever were reported in Philadelphia on March 6, bringing the total this year to 1,358. The city council's finance committee voted \$14,400 to be used in preventing a spread of the epidemic. Of the 636 patients in the city's contagious disease hospital, 554 were scarlet fever patients at the time of this report.

Meeting on Nutrition.—The Philadelphia County Medical Society devoted its meeting, March 11, to a round table on nutrition with Dr. David T. Smith, professor of bacteriology and associate professor of medicine, Duke University School of Medicine, Durham, N. C., as guest speaker discussing "Recent Advances in the Vitamin Field of Practical Importance in Therapy." Members of the panel were Drs. Katharine O'Shea Elsom, Herbert T. Kelly, Waldo E. Nelson, George Harlan Wells, John H. Willard and Michael G. Wohl.

Meeting on Nutrition and Defense.—The Woman's Auxiliary to the Philadelphia County Medical Society announces the twelfth annual health institute in the society's auditorium, April 14, with Mrs. Francis F. Borzell presiding. "Nutrition and Defense" will be the theme. The speakers will be:

Dr. Katharine O. Elsom, Vitamins in Relation to National Defense.
Dr. John H. Gunter, Nutrition and the Teeth.
Dr. Earl D. Bond, Nutrition and the Emotions.
Mrs. Charles C. Crouse, Greensburg, Pa., The Responsibility of the Doctor's Wife in This Crisis.
Dr. Gilson Colby Engel, Cancer As It Concerns You.
Dr. Arthur Parker Richards, First Lieut. Colonel, U. S. Army, Nutrition, Health and the Soldier's Job.
Dr. Lewis C. Brown, Pa., Organized Efforts in Medical Defense.

RHODE ISLAND

Personal.—Dr. Peter Pineo Chase, Providence, has been appointed editor of the *Rhode Island Medical Journal*, succeeding Dr. Albert H. Miller, Providence, who has retired after more than five years in the position.—The Men's Club of Temple Emanu-El recently presented Dr. Herman C. Pitts with its yearly award "to a citizen of Providence for outstanding achievement in the field of civic improvement, human betterment and advancement of American ideals."

Society News.—The Providence Medical Association devoted its meeting, March 2, to a symposium on hypertension with the following speakers: Drs. Morgan Cutts, Robert R. Baldrige and Clifton B. Leech. All are of Providence. The association was addressed on February 2 in joint session with the Rhode Island Medical Society by Drs. Allen O. Whipple and Louis Bauman, New York, who discussed therapy of pancreatic disease and Dr. Walter G. Phippen, Salem, Mass., "The Procurement and Assignment Service for Physicians."

New Pathologic Society.—Announcement is made of the organization of the Rhode Island Society of Pathologists at a meeting in Howard. Officers include Drs. Benjamin Earl Clarke, Providence, president, and Louis Goodman, Howard, secretary-treasurer. Active membership is open to graduates of recognized medical schools who have specialized in the practice of pathology or who occupy positions as pathologists in approved hospitals. The group aims to provide periodic conferences for mutual assistance, to maintain and improve the services of the pathologist to the physician and patient, and to stimulate productive work in the field of pathology.

VIRGINIA

Young Physician Prisoner of War in Japan.—Lieut. Richard Bland Williams Jr., Portsmouth, on duty at the Naval Hospital in Guam when the island was taken by the Japanese, is a prisoner in Japan, according to a message published in the *Norfolk Pilot*, February 18. Dr. Williams graduated at the University of Virginia Department of Medicine, Charlottesville, in 1939 and later served at the Norfolk Naval Hospital in Portsmouth. He is 27 years of age.

Change in Graduate Instruction.—At a specially called meeting to decide on the year's program, the department of clinical and medical education of the Medical Society of Virginia agreed that a change of emphasis in postgraduate instruction was necessary. The usual clinics at the medical schools, which have been a part of the program in the past, will not be included because of war conditions and the increased demands on practicing physicians and the medical school staffs. The department will, however, continue to furnish speakers and assist financially in sponsoring local programs, especially in the field of industrial medicine and military medicine.

An Experiment in Nutrition.—Two sections of Richmond have been selected as test areas for an intensive campaign intended ultimately to improve the nutritional standards of the American people. According to the state medical journal, Virginia was selected for this experiment because of the state's historical background, its highly cooperative volunteer service for defense and the ready availability of personnel for the experiment. Cooperating with the city and state health departments are the Medical College of Virginia, Richmond, Virginia Defense Council, Federation of Woman's Clubs, Richmond Home Economics Association, Richmond Academy of Medicine, Federation of Parent Teachers Associations, Richmond Dental Society, the junior league, the citizens' league defense program of the Office of Civilian Defense, the Dairy Council, Virginia Tuberculosis Association, Colored Recreation Association, WPA division of community service programs, Richmond Public Library, Richmond Social Service Bureau, Richmond Dietetic Association and the Farm Security Administration. Organization and instruction programs will be carried out, and surveys will be made to determine changes in consumers' buying habits. One study already completed has shown that only about 10 per cent of the children in an elementary school in Richmond are selecting or bringing from homes balanced lunches. The program is under the direction of the Office of Defense Health and Welfare Services.

WISCONSIN

Annual Spring Clinics.—The Wisconsin State Medical Society will hold its annual spring clinics in Chippewa Falls on April 27, in Wausau on April 28 and in Fond du Lac on April 29. Participating will be:

Walter Zeit, Ph.D., Milwaukee, Anatomy of the Female Pelvis and Anatomy of Stomach and Gallbladder.
Dr. Howard H. Cummings, Ann Arbor, Mich., Postpartum Care: Repair of Lacerations and Episiotomy Wounds; Complications of Menopause.
Dr. Walter L. Palmer, Chicago, Functional Colitis; Peptic Ulcer, Surgical Management.
Dr. William C. Keettel Jr., Madison, Obstetrical Manikin Demonstration.
Dr. William S. Middleton, Madison, Carcinoma of the Lung.
Dr. Stephen E. Gavin, Fond du Lac, The Medical Profession and the War.
A series of round table dinners will conclude each program.

GENERAL

Citations for Distinguished Service.—During the annual dinner of the Birth Control Federation of America, Inc., New York, January 28, citations for distinguished service in the advancement of human welfare were awarded to Pearl S. Buck, New York, author; Paul U. Kellogg, New York, editor, *Survey Graphic*; Julian S. Huxley, author; Dr. Carl V. Reynolds, Raleigh, state health officer of North Carolina, and Dr. George M. Cooper, Raleigh, assistant state health officer of North Carolina.

Special Society Election.—Selman A. Waksman, Ph.D., New Brunswick, N. J., was elected president of the Society of American Bacteriologists at its annual meeting in Baltimore recently. Rebecca Lancefield, Ph.D., of the Rockefeller Institute for Medical Research, New York, was named vice president, and William B. Sarles, Ph.D., Madison, Wis., secretary-treasurer. Ira L. Baldwin, Ph.D., Madison, who had been secretary for a number of years, was reelected secretary but was compelled to resign on account of ill health. The society adopted a resolution honoring Dr. Baldwin for his service.

Industrial Physicians and Surgeons.—The twenty-seventh annual meeting of the American Association of Industrial Physicians and Surgeons and the third annual meeting of the American Industrial Hygiene Association will be held at the Hotel Gibson, April 13-17. Included among the speakers will be:

Dr. Harold C. Habern, Rochester, Minn., The Health of the Executive
Dr. James Barrett Brown, St. Louis, Advances in Skin Grafting
Eugene W. Scott, Ph.D., Cincinnati, Metabolism of Nitroparaffins
Dr. Willard F. Macble and Edward J. Largen, A.B., Cincinnati, Absorption, Retention and Excretion of Fluorides at Normal and Abnormal Levels of Intake.
Dr. Francis F. Heyroth and Jacob Cholak, Ch E, Cincinnati, Toxicity of Aluminum.
Frederick H. Goldman, Ph.D., Washington, D. C., Analysis of Atmospheric Samples of Explosive Chemicals
L. P. Pekrul, Robert C. Lewis, Ph.D., and Donald E. Cummings, B.S., Denver, A Reliable Procedure for the Evaluation of Exposure to Lead by Spot Urine Sampling.

One session on Wednesday will be devoted to a symposium on lead poisoning. Another symposium will cover "Medical Service for the Small Plant." The Knudsen Award will be presented at the annual dinner, Wednesday evening.

Regional Meeting on Physical Therapy.—The Eastern Section of the American Congress of Physical Therapy will hold its spring session in Philadelphia, April 11, in conjunction with the Connecticut Physical Therapy Society, the New Jersey Society of Physical Therapy Physicians, the New York Physical Therapy Society and the Pennsylvania Academy of Physical Medicine. Included among the speakers will be:

Dr. Harold Lefkoe, Philadelphia, The Office Use of the Paraffin Bath
Dr. Richard Kovacs, New York, Painful Shoulders
Dr. Stella S. Bradford, Montclair, N. J., Posture and Its Relation to Health and Disease.
Dr. Charles R. Brooke, New York, Physical Measures in the Treatment of Veterans.
Dr. William H. Schmidt, Philadelphia, Presentation of Clinical Cases from the Department of Physical Therapy of the Jefferson Hospital
Dr. Alexander Hersh, New York, The Influence of Hot and Cold Applications on Temperature in the Mouth.
Dr. Winthrop M. Phelps, Baltimore, Recent Trends in the Treatment of Cerebral Palsy.
Drs. Frederick M. Allen and Lyman W. Crossman, New York, Refrigeration Anesthesia for Extremity Surgery
Dr. Washington Merscher, New York, Mobilizing American Spas

Research on Problems of Alcohol.—According to *Science* the Research Council on Problems of Alcohol has the following studies under way:

A critical survey of all work completed to date on the effects of alcohol on the individual by the New York University College of Medicine, with a grant of \$25,000 from the Carnegie Corporation.

A study of toxic factors in alcoholism by the New York State Psychiatric Institute, with a grant of \$1,500 from the American Philosophical Society. The minimum value of services and facilities contributed by the institute is \$2,200.

A study of the role of alcohol in liver cirrhosis by the New York University College of Medicine, with two grants, \$2,100 and \$1,500, from the Dazian Foundation for Medical Research. The minimum value of services and facilities contributed by the university is \$7,200.

A study of reactions resulting from the ingestion of alcohol, for the ultimate purpose of discovering how a craving for alcohol is established, by the Phipps Psychiatric Clinic of Johns Hopkins University, with a grant of \$1,800 from the council's research fund. The minimum value of services and facilities provided by the clinic is \$3,750.

What happens to patients discharged as "cured" from the institutions for alcoholics by Columbia University, with a grant of \$7,500 (for the first year) from the council's research fund.

The effects of maternal alcohol ingestion on the fetal cortex by the Medical College of Virginia, Richmond, with a grant of \$1,315 from the council's research fund. The minimum value of services and facilities provided by the Medical School is \$500.

An informal survey of a town of four thousand people to reveal the extent of alcoholism and the adequacy of measures now in use for its treatment by E. M. Jellinek of the Laboratory of Applied Physiology of Yale University. This study is being carried on to provide for the experimental use of techniques being considered for a more extensive study.

Report on Youth Health Program.—More than a quarter of a million young persons have been given complete physical examinations since the national youth health program was instituted in September 1940, according to a recent report. Preliminary studies on the sixty-one thousand examinations showed that, while 70 per cent of the youths were found to be physically fit for any type of employment, medical and dental care was recommended for four out of five of the young people examined. The health program serves to reduce the number of young workers rejected by industry because of physical defects and at the same time opens the way for rehabilitation of many who would otherwise be unable to contribute to the war effort. On July 1, 1941 the National Youth Administration established the Youth Work Defense Program, which it operates under the supervision of Lieut. Col. Nathaniel A. Burnell, director of defense training for both the Federal Security Agency and the Office of Production Management. This program consists of seven hundred and sixty-one local production projects and one hundred and seventy-five resident center projects, which comprise almost one thousand nine hundred shop units. These projects are distributed throughout the country, in all states and in most counties. During the period July 1941 through December 1941 more than one hundred and ninety thousand youths who received their work experience on NYA projects were able to obtain jobs in industry. More than thirteen thousand young workers were gaining experience in hospital duties through service as nurses' aides or ward attendants.

Federation of Societies for Experimental Biology.—The twenty-ninth annual meeting of the Federation of American Societies for Experimental Biology will be held in Boston, March 31-April 4. Each of the constituent societies will have its own headquarters as follows: Physiology, Hotel Statler; Biochemistry, the Copley-Plaza; Pharmacology, the Brunswick; Pathology, the Parker House, and Nutrition, Hotel Lenox. At a joint session of all groups in the Hotel Statler the following program will be offered:

Edward A. Doisy, Ph.D., St. Louis, Metabolism of Estrogens.
John R. Murlin, Ph.D., Rochester, N. Y., Nutritional Problems in Relation to the Nation's Health.
Dr. Ralph M. Waters, Madison, Wis., Newer Viewpoints on Clinical Anesthesia.
Frieda S. Robscheit-Robbins, Ph.D., Rochester, N. Y., Amino Acids in Hemoglobin Formation.
George O. Burr, Ph.D., Minneapolis, Significance of the Essential Fatty Acids.

There will be symposiums on vitamins and enzyme action, the metabolism of protein, contributions of physics to biochemistry and on morphine problems, deficiency diseases and mechanism of secretion. The Mead Johnson & Company "B Complex" Award will be presented during the first day's session of the American Institute of Nutrition on Wednesday. Thursday morning the pathologists will meet with the American Association of Immunologists. On Friday there will be a round table conference of the Biochemistry group with the Biometric Section of the American Statistical Association. The constituent societies of the federation are the American Physiological Society, the American Society of Biological Chemists, the American Society for Pharmacology and Experimental Therapeutics, the American Society for Experimental Pathology and the American Institute of Nutrition.

National Tuberculosis Meeting.—The thirty-eighth annual meeting of the National Tuberculosis Association will be held at the Bellevue-Stratford Hotel, Philadelphia, May 6-9. The thirty-seventh annual meeting of the American Trudeau Society and the eighteenth annual meeting of the National Conference of Tuberculosis Secretaries will be held simultaneously. According to the preliminary program there will be panel discussions on "The Management of Patients with Occasional Positive Sputum After Apparently Adequate Therapy" and on the "Treatment of Postoperative Complications." Among the speakers on the program will be:

Dr. Walter K. Whitehead, Northville, Mich., The Physiological Function of the Two Lungs Separately Under Varying Conditions.
S. Reid Warren Jr., Sc.D., Philadelphia, Technical and Economical Factors Associated with the Production of Miniature Chest Roentgenograms.
Dr. Robert G. Bloch, Chicago, The Roentgenographic-Pathologic Correlation of Tuberculous Calcifications in the Lung.
Dr. Chevalier L. Jackson, Philadelphia, The Development of Bronchoscopy.
Florence B. Seibert, Ph.D., Philadelphia, Immunological Processes in Tuberculosis as Determined by Electrophoresis of the Blood.
William H. Feldman, M.S., and Drs. Horton Corwin Hinshaw, Frank C. Mann of Rochester, Minn., The Effect of Promin on Experimental Tuberculosis in the Guinea Pig.

On Thursday there will be one session devoted to "The Historical and Social Significance of the Tuberculosis Movement" and on Friday a symposium on "Tuberculosis Associations and National Defense." Dr. Henry C. Sweeney, Chicago,

will be chairman at a diagnostic and therapeutic clinical conference, Friday evening. The session will conclude Saturday morning with the following program:

Dr. Louis E. Siltzbach, New York, Medical Aspects of the Rehabilitation of the Tuberculous.
Dr. George H. Gehrmann, Wilmington, Del., Industry's Responsibility for the Worker's Health.
Dr. Arthur N. Aitken, Lockport, N. Y., Clinical Criteria for Determining Tolerance Following Pulmonary Tuberculosis.
Dr. J. B. McDougall, London, England, Tuberculosis and the War in England, paper to be read by Dr. George J. Wherrett, Ottawa, Ontario, Canada.

The fifteenth anniversary dinner of the Pennsylvania Tuberculosis Society will be held Thursday night.

LATIN AMERICA

Hospital News.—Ceremonies were recently held to lay the cornerstone of a new municipal medicosurgical teaching hospital at Avenida 28 de Setembro of Rio de Janeiro.

New Director of Public Health in Haiti.—Jules Thebaud, D.D.S., Port au Prince, Haiti, was appointed director of the National Department of Hygiene and Public Health in Haiti, January 16. Dr. Thebaud graduated at the University of Montreal in 1923. He has been director of the dental school in Port au Prince since 1928. He is the founder and president of the Société Dentaire d'Haiti. Dr. Thebaud has taken graduate work at the New York College of Dentistry, Forsythe Dental Infirmary of Boston, University of Havana, Northwestern University and Columbia University, New York.

Government Services

National Conference on Industrial Hygiene

The fifth annual meeting of the National Conference of Governmental Industrial Hygienists will be held in Washington, D. C., April 9-11. Among the many papers to be presented at this meeting are the following: Mr. Verne A. Zimmer, director, Division of Labor Standards, U. S. Department of Labor, Washington, D. C., "The Activities of the Committee for the Conservation of Manpower in War Industries" and Dr. John G. Cunningham, Toronto, Canada, Province of Ontario Department of Health, "Canadian Experience in War Industries."

Dr. Heacock to Coordinate Work of State Divisions

Lyman D. Heacock, D.D.S., Bethesda, Md., formerly of the California State Department of Health, has been appointed to the Division of Industrial Hygiene of the National Institute of Health to coordinate the work of the state divisions of dental health and industrial hygiene with the various plants and nonofficial agencies concerned with maintaining dental health. Dr. Heacock was to begin his work in Alabama on March 3. He will be available to any state requesting his services through the Division of Industrial Hygiene, National Institute of Health, Bethesda, Md.

Dr. Fulton Named Health Chief in Bureau of Mines

Dr. William B. Fulton, Harrisburg, Pa., senior surgeon, U. S. Public Health Service Reserve, has been appointed chief of the health division in the Bureau of Mines, U. S. Department of the Interior. He will direct the bureau's expanding activities in safeguarding the physical welfare of thousands of workers in the mineral industries. The health division and safety branch seeks to reduce the occurrence of occupational diseases in these industries by the investigation of gases, dusts and other atmospheric contaminants, and by the development of adequate safeguards against such hazards. Physiologic studies of occupational diseases and the examination of respiratory devices such as gas masks are also a part of the work. Dr. Fulton graduated at the University of Pittsburgh School of Medicine in 1929. After completing his residency he practiced medicine for four years. In 1934 he became chief of the division of industrial hygiene of the Pennsylvania Department of Labor and Industry. Two years later he was transferred to the Pennsylvania Department of Health and appointed director of the Bureau of Industrial Hygiene, where he remained for five years. In January of this year he was appointed senior surgeon in the public health service reserve and detailed to duty with the Bureau of Mines. In 1941 Dr. Fulton received his master's degree in public health at the University of Pennsylvania.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 7, 1942.

The Otolaryngologist in the War

At the Section of Laryngology of the Royal Society of Medicine the problems of the otolaryngologist in the war were discussed. The president, Mr. E. D. D. Davis, said that at the outbreak of war the work of the specialist, hospital and private, almost disappeared. He hoped that in the Emergency Medical Service (for the civilian war casualties) otolaryngologists would insist on sufficient staff, equipment and accommodation for efficient service and that in the army otolaryngology would no longer be the Cinderella of the specialties. Relatively few otolaryngologists could be adequately employed in their own specialty in the army, and the question was how to occupy them fully. The successful practice of otolaryngology required a sound knowledge of surgery; the otolaryngologist must not confine his attention to the ear, nose and throat. He could be trained in a short time as a war surgeon. The president suggested that ear, nose and throat work should be concentrated in one well equipped unit in each sector of the emergency hospital service, naval base, army command and air force hospital, each unit to have a minimum of two surgeons and assistants.

Surgeon Rear-Admiral C. P. G. Wakeley said that in the navy the ear, nose and throat surgeon also served as a general surgeon. In many instances there would not be enough work for him to do if he was limited to his specialty. As a rule, junior medical officers were selected for the work. They were given practical courses and then sent to the large base hospitals to take over a department under a senior who was a surgical specialist. After experience at the base hospital for two or three years, the young surgeon went to sea and probably became a specialist of his squadron. But during all this time he was doing general surgery.

Major D. Guthrie said that the military practice of the specialty differed considerably from the civil. Radical operations requiring long after-treatment had little place in the army. The object was to return the man to his unit as fit and as quickly as possible. The cases came under three heads: (1) routine cases, such as tonsillitis, deviated septum and various forms of sinusitis, (2) chronic otitis, still very common in the army and largely the result of long neglect, and (3) headache persisting after correction of errors of refraction and calling for attention to the ear, nose or throat.

A Survey of the London Hospitals

The hospital system of this country, like many other things, will probably undergo changes as a result of the war. In the House of Commons the minister of health stated that in connection with the government's postwar policy he had ordered a survey of the hospitals (other than mental hospitals) of London and the surrounding area. The object is to ascertain what area would appropriately be served by a hospital system centered on London and what modifications or extensions of the existing hospital facilities would be desirable. The surveying officers will be Dr. A. H. M. Gray (dermatologist and president of the Royal Society of Medicine) and Dr. Andrew Topping (deputy health officer and school medical officer for the county of London). The former is associated with the voluntary hospitals, the latter with the municipal hospitals. But they have not been chosen as representatives of these two aspects of the problem. Their qualification is a large experience in separate fields of hospital administration. They are to advise how hospitals can give the best service to the public. The question of teaching will be separately considered.

American Red Cross Aid to Britain

American Red Cross supplies to Britain are to be continued in spite of America's entry into the war. In a cablegram just received from the American Red Cross headquarters in Washington the chairman, Mr. Norman Davies, states that "While developments may curtail or restrict the movement of relief supplies to Great Britain, primarily because of increased difficulties of procurement and shipping, the American Red Cross does not contemplate drastic reduction of relief to Britain because of our entry into the war. While immediate and emergency needs in the Pacific may require some dispersion of supplies intended for Great Britain, our resources should be adequate to meet all urgent British needs which cannot be otherwise provided by lend-lease and which are within the scope of the established program of the American Red Cross. Its aid to Britain has now reached a total of \$37,800,000. A further \$3,100,000 worth of relief supplies has been sent to the Middle East.

Rehabilitation of the Injured

In an address on the emergency hospital service Mr. Ernest Brown, minister of health, said that at the beginning of the war the hospitals were expected to receive thousands, even hundreds of thousands, of civilian casualties from air raids. There was a lull until the last four months of 1940, during which 80,000 casualties were treated in hospitals or first aid posts. The emergency hospital service was now no longer only a casualty scheme but one that tried to meet all new war needs as they arose. Specialist treatments were developed in selected centers. They included (1) orthopedic centers, which numbered twenty-one and covered all aspects of fracture treatment from the initial setting to physical therapy, remedial exercises and occupational therapy, (2) fracture departments (a), which numbered fifty-six and differed from the preceding only in not containing the highly specialized equipment for certain more difficult cases, (3) fracture departments (b), which numbered two hundred and thirteen and were mainly hospitals that in peacetime might be suitable for the second category but were now unsuitable for long stay cases owing to their vulnerable situation, and (4) fracture departments (c), which filled the gaps in areas which the hospitals did not conveniently cover.

THE RESTORATION OF WORKING CAPACITY

This organization, with its four hundred and twenty-six establishments and eminent surgeons to advise the staff in every region aimed at the fullest possible restoration of working capacity and the training of and resettlement of the disabled person in a suitable occupation. Arrangements have been made for contact between the patient, his surgeon and a Ministry of Labor officer. This officer interviews the patient before he leaves the hospital and gives advice when the patient has decided what trade he is going into. A training course is arranged. Thus the emergency hospital service has made a great advance on the prewar treatment, which varied according to the initiative and resources of the local hospital. The entire treatment and retraining are correlated. The minister of health claimed that the rehabilitation organization has come to stay.

The Bread Controversy

There seems to be no end to the bread controversy. Acting on the advice of the Medical Research Council, the government ordered the production of "national wheatmeal flour" of 85 per cent extraction instead of the usual 73 per cent. The council recommended that flour for the bread of the people should contain the germ of the wheat grain, as much as possible of the aleuron layer and the finer portion of the bran. The object was that the flour should contain as much as possible of the B vitamins and protein. The importance of a bread made with such protective qualities during this period of dietetic restriction is recognized by the medical profession. Unfortunately,

the specification made by the government has been so drawn up that the millers have been able to supply a flour without these valuable properties, which is nothing better than the old white flour, so rightly condemned, colored with bran so as to resemble the genuine wheatmeal loaf. The situation has been strongly criticized in the medical press. Sir Ernest Graham-Little (dermatologist and member of parliament) states in a letter to the *Lancet* that the Ministry of Food has extensively advertised the merits of the national wheatmeal loaf and yet its consumption amounts to only 7 per cent of the total bread consumption. Its composition is variable and it cannot be obtained over wide areas. He suggests that one nutritive factor in the increase of tuberculosis (mentioned in previous letters to *THE JOURNAL*) is the poor nutritive value of the white loaf, which is entirely deprived of the wheat germ. He attributes the position to the influence exerted by the milling industry through key positions held by members of it in the ministry.

PARIS

(From Our Regular Correspondent)

Feb. 7, 1942.

Athletics and Youth

In France the development of athletics especially among young people is considered important nowadays. A special Commissariat général à l'éducation générale et au sport has been created, the head of which is Boutra, who won with three other French athletes the Davis Cup in 1928 in the United States. The commissariat has local organizations in each department of France. The physical development of young persons is considered so important that an adolescent desiring to take his bachelor's degree has to pass an examination that proves his athletic qualification. In the schedule of the higher schools for boys from five to twenty-five hours have been devoted until lately to athletic pursuits; for girls it has been three hours a week. The commissariat's immediate program consists in constructing numerous gymnasiums or athletic fields. This activity has been criticized sharply by French physicians because of alimentary difficulties; nowadays all medical problems are regarded from the point of view of the food shortage. At the Academy of Medicine the late Professor Rathery emphasized the danger of excessive athletic activity of the young. He stated three principles to be observed; the constitution of those concerned and the limits of their body capacity, a strict adaptation of the requested charge to this capacity and a prescribed normal feeding. Recently Professor Lesne discussed this problem in detail before the Institut d'éducation physique. The calory requirement for moderate activity is 1,700 at 7 years of age, 1,700 from 7 to 9, 1,900 from 9 to 11, 2,000 from 11 to 12, 2,400 from 12 to 14 and 2,800 over 14. Normally there exists a

Heart Disease in Paris

Year	Deaths from Known Causes, Number	Deaths Caused by Heart Disease Number	Per Cent
1925	38,842	3,975	10.23
1934	30,445	4,515	14.83
1939	27,043	4,050	14.98

calory compensation for adolescents between 7 and 16 years. The organism requires from 900 to 1,500 calories for the support and growth of the body; therefore from 500 to 1,300 calories remain for use against cold and for muscular activity. The cold requires from 200 to 300 calories a day between the ages of 12 and 16 years in rooms having a temperature of 65 F. and 480 to 730 calories in rooms with temperature of 55 F. The caloric loss is less if the child wears warmer clothes. Normal activity at school requires 90 to 300 calories for five to six hours. For one hour of athletic exercise a loss of 200

to 250 calories can be assumed. All this is entirely covered by the caloric value of a normal feeding. The actual feeding, however, grants only a sufficient caloric value until the age of 7 years (1,225 calories). The quantity is insufficient for older children; the deficit for children above 14 years amounts to 1,500 to 1,600 calories a day. Even if the physical education

Deaths in Lyons

Year	Deaths from Known Causes, Number	Deaths Caused by Heart Disease Number	Per Cent
From 1887 to 1891	44,662	3,440	7.70
From 1912 to 1916	38,785	4,877	11.04
From 1927 to 1931	33,180	4,781	12.47
From 1938 to 1940	20,665	3,582	17.32
Last 6 months of 1941	4,663	864	18.52

of young persons is necessary for the normal development of the body, this exercise must be proportional to feeding. If there exists no possibility of providing a normal feeding it is necessary to shorten exercise and prolong rest and sleeping.

On the other hand, excessive activity of young people outside the school has been criticized. At an examination in the Centre d'examen des pilotes civils de la région Lyonnaise Drs. Delaigue and Leonet stated that of 175 candidates between 17 and 20 years of age 22 candidates, that is 12 per cent, proved inapt. These 22 candidates, nearly all athletes, who were examined clinically and by radioscopy, showed signs of cardiac insufficiency. An article entitled "La frénésie sportive et l'usure du coeur" by Auguste Lumière in the November 1941 issue of *L'avenir médical* gives figures on the increasing incidence of heart disease in Paris. The figures for Lyons for half a century also are striking.

On account of the feeding problem the Secrétariat pour la famille et la santé resolved to diminish for the current school year the physical education of children: for boys three hours instead of five, for girls two hours instead of three a week. In several departments the local athletic committees have also reduced play time for rugby, football and other strenuous games.

The Shortage of Medicaments

For months the Academy of Medicine has studied the problem of the increasing shortage of indispensable medicaments. At the suggestion of the surgeon George Duhamel, a member of the Academy of Medicine, a commission has been created which is endeavoring to publish periodically a list of medicaments and chemical products becoming scarce. The commission observes also the consequence of this shortage in medical practice and tries to find substitute medicaments. Fournneau, Tiffeneau, Grosset, Loepcr, Goris, Ramon, Guérin, Duhamel, Rathery and Fabrè (newly elected) belong to this Commission de rationnement pharmaceutique. Most raw materials come from foreign countries, and the importation of these has mostly been cut off. A second reason consists in the difficulty of transportation and the shortage of packing material.

There is also a shortage of surgical material, for instance absorbent cotton, gauze and cellulose. Ether, chloroform and procaine hydrochloride, however, are not scarce. Professor Ramon, scientific head of the Pasteur Institute of Paris, reported that a shortage of vaccines is not to be feared.

In the latest list presented by Goris at a meeting Oct. 21, 1941 of the Academy of Medicine, caffeine, theobromine, bis-muth salts, iodine, camphor, boric acid and its derivatives, petrolatum, quinine, opium and its alkaloids, glycerin, hydrous wool fat, cod liver oil, starch, dextrose, mustard meal, lactose, tartaric and citric acids, insulin, many alkaloids and many chemical and vegetable products were said to be extremely scarce or missing entirely. At the same time the Academy of Medicine published a list of substitutes for these medicaments, the effect of which is of course far less efficacious.

Deaths

Alfred Simpson Taylor * New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; at one time instructor and professor of operative surgery and lecturer in neurosurgery at his alma mater; professor of clinical surgery at the Cornell University Medical College from 1910 to 1930; an Affiliate Fellow of the American Medical Association; member of the American Surgical Association, Society of Neurological Surgeons and the American Neurological Association; fellow of the American College of Surgeons; formerly senior attending neurological surgeon at the Neurological Institute; consulting neurological surgeon at the Hospital for Ruptured and Crippled, St. Luke's Hospital, Memorial Hospital for Treatment of Cancer and Allied Diseases, Tarrytown (N. Y.) Hospital and the Overlook Hospital, Summit, N. J.; aged 73; died, January 16, of brain tumor.

Edgar Alexander III * Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1910; member of the American Urological Association and the American Radium Society; fellow of the American College of Surgeons; past president of the Essex County Medical Society; for many years member of the board of education; served during World War I; attending surgeon, St. Michael's Hospital and the Hospital of St. Barnabas and for Women and Children; consultant, Essex County Hospital, Belleville, Rahway (N. J.) Hospital, South Amboy (N. J.) Hospital, Muhlenberg Hospital, Plainfield, Somerset Hospital, Somerville, Perth Amboy (N. J.) General Hospital and the Irvington (N. J.) General Hospital; aged 59; died, February 1, of illuminating gas poisoning, self administered.

George Clute Reid, Rome, N. Y.; Baltimore Medical College, 1902; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; owner and formerly medical director of the Rome Infirmary; on the staff of the Rome Hospital and Murphy Memorial Hospital; member of the board of managers of the Oneida County Hospital; president of the board of managers of the Oneida County Tuberculosis Sanatorium (Broadacres), Utica; aged 63; died, January 8, in Palm Springs, Calif., of multiple myeloma.

Cassie Belle Rose-Thatcher * Boulder, Colo.; Rush Medical College, Chicago, 1914; member of the American Roentgen Ray Society, the Radiological Society of North America and the American College of Radiology; formerly associate professor of surgery (radiology) at her alma mater; for many years radiologist to the Presbyterian Hospital, Chicago; on the staff of the Porter Sanitarium and Hospital, Denver, and the Boulder-Colorado Sanitarium and Hospital; aged 58; died, January 18, of carcinoma of the cervix.

Floyd James Lee * Santa Monica, Calif.; College of Medical Evangelists, Los Angeles, 1924; assistant professor of gynecology at his alma mater; past president of the Santa Monica branch of the Los Angeles County Medical Society; fellow of the American College of Surgeons; aged 43; gynecologist, White Memorial Hospital, Los Angeles; on the staff of the Los Angeles County Hospital, Los Angeles, and the Santa Monica Hospital, where he died, January 3, of coccidioidal granuloma of the mediastinal glands.

George Percy Sprague * Lexington, Ky.; Jefferson Medical College of Philadelphia, 1890; past president of the Southern Psychiatric Association; member of the American Psychiatric Association and the Central Neuropsychiatric Association; formerly on the staff of the Danvers (Mass.) State Hospital; for many years owner and consultant of the High Oaks Sanatorium; aged 78; died, January 18, of subdural hemorrhage resulting from a fall.

Elias Cecil Fischbein * Dayton, Ohio; Cornell University Medical College, New York, 1905; member of the American Psychiatric Association; served during the World War; formerly medical director of the Orchard Springs Sanitarium; on the consultant staff of the Dayton State Hospital; on the staff of the Good Samaritan Hospital and the Miami Valley Hospital, where he died, January 21, of coronary thrombosis, aged 58.

Jesse Herbert Teague, Laurens, S. C.; University of Maryland School of Medicine, Baltimore, 1900; member of the South Carolina Medical Association; past president of the Laurens County Medical Society; served as chairman of the board of trustees of the city schools; aged 69; died, January 5, in the Laurens County Hospital of *staphylococci* septicemia.

Max C. Starkloff * St. Louis; St. Louis Medical College, 1881; past president of the International Society of Medical Health Officers; formerly city health commissioner; past president of the United States Board of Pension Examining Surgeons; in 1918 member of the Volunteer Medical Service Corps, Council of National Defense; aged 83; died, January 15.

Hugh James Downey, Pittsfield, Mass.; Chicago College of Medicine and Surgery, 1912; member of the Massachusetts Medical Society; past president and secretary of the Berkshire District Medical Society; on the staffs of St. Luke's Hospital and the House of Mercy Hospital; aged 59; died, January 31, of cerebral hemorrhage and chronic nephritis.

Filippo Cassola * New York; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1899; aged 66; on the staff of the Mother Cabrini Memorial Hospital; surgeon and president of the medical board of the Columbus Hospital, where he died, February 28, of hepatic cirrhosis with hemorrhage from esophageal varices.

Raymond Robert Westover * Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1906; aged 58; associate surgeon at the Bethany Deaconess Hospital; attending surgeon and chairman of the medical board of the Evangelical Deaconess Hospital, where he died, January 12, of coronary thrombosis.

Martha Maria Brewer Lyon * South Bend, Ind.; Howard University College of Medicine, Washington, D. C., 1907; member of the Association for Research in Ophthalmology; formerly secretary of St. Joseph County Medical Society; aged 70; died, January 18, in the Epworth Hospital of pulmonary tuberculosis.

Edward Rutledge * Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1896; clinical professor emeritus of medicine at his alma mater; for many years physician and surgeon for the city fire department; on the staff of the Roper Hospital; aged 71; died, January 9, of cerebral hemorrhage.

Carl Joseph Harris, Washington, D. C.; University Medical College of Kansas City, Mo., 1900; medical consultant with the Board of Appeals of the Veterans Administration; veteran of the Spanish-American War; aged 65; died, February 22, in the George Washington University Hospital of hypertensive heart disease.

James Francis Cox * Bangor, Maine; Medical School of Maine, Portland, 1909; past president of the Penobscot County Medical Society; served during the World War; aged 61; on the staff of the Eastern Maine General Hospital, where he died, January 18, of gastric hemorrhage.

Henry Reeves Link * Palestine, Texas; Bellevue Hospital Medical College, New York, 1889; past president of the Anderson County Medical Society; formerly county health officer; on the staff of the Palestine Sanitarium; aged 76; died, Dec. 25, 1941, of bronchiectasis.

Joseph Stocking Lewis * Elmira, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1906; past president of the Medical Society of the County of Chemung; on the staff of St. Joseph's Hospital; aged 61; died, January 21, of coronary occlusion and arteriosclerosis.

Robert Millard Deming * Glencliff, N. H.; University of Vermont College of Medicine, Burlington, 1916; served with the British Army during World War I; medical director and superintendent of the New Hampshire State Sanatorium; aged 47; died, January 28, of heart disease.

Frank Downey Travis, Ponchatoula, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1911; member of the Louisiana State Medical Society; aged 57; died, January 5, in a hospital at New Orleans of adenocarcinoma of the rectum and bronchopneumonia.

Stanton Jacob Ten Broeck, Orange, Mass.; University of the City of New York Medical Department, 1893; member of the Massachusetts Medical Society; aged 70; died, January 14, in the New England Baptist Hospital, Boston, of metastatic carcinoma of the pleura.

Oscar M. Richards, Easton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; on the auxiliary staff of the Easton Hospital; aged 76; died, January 23, of cerebral thrombosis.

Clinton D. Vermillion, Tescott, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1901; member of the Kansas Medical Society; aged 73; died, Dec. 27, 1941, in Salina of aortic stenosis and coronary sclerosis.

William Blount Turner II ☉ Knoxville, Tenn.; University of Cincinnati College of Medicine, 1924; acting health officer in Anderson County, Ky., from September 1938 to June 1939; aged 42; died, January 10, in Richmond, Ky., of coronary thrombosis.

John Thomas Finley, Prairie du Rocher, Ill.; Eclectic Medical College, Cincinnati, 1927; member of the Illinois State Medical Society; formerly mayor and deputy coroner; aged 44; died, January 25, of malignant hypertension and chronic myocarditis.

Hans Peter Gottfredsen, Lowell, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1906; served during World War I; aged 61; died, January 27, in the Blodgett Memorial Hospital, Grand Rapids, of coronary thrombosis.

Robert Marshall West, Salisbury, N. C.; Medical College of Virginia, Richmond, 1900; member of the Medical Society of the State of North Carolina; on the staff of the Rowan Memorial Hospital; aged 72; died, January 14, of angina pectoris.

Beecher Johnson Terrell ☉ Indianapolis; Medical College of Indiana, Indianapolis, 1894; member of the Indiana State Medical Association; served during World War I; aged 72; was killed, January 14, when his automobile was struck by a train.

Theodore Jacob Ewonchuk, St. Vital, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1933; aged 35; died, Dec. 19, 1941, in St. Boniface Sanatorium.

William K. Ruble, Wilmington, Ohio; Eclectic Medical Institute, Cincinnati, 1890; for many years county health officer; aged 79; died in January of myocarditis.

William H. Atkinson, Killeen, Texas; University of Tennessee Medical Department, Nashville, 1891; aged 88; died, Dec. 12, 1941, in Waco of senility.

Albert George Webster ☉ Baltimore; University of Maryland School of Medicine, Baltimore, 1911; aged 56; died, Dec. 20, 1941, of carcinoma of the colon.

Albert Frank Streuter ☉ Arenzville, Ill.; Northwestern University Medical School, Chicago, 1906; aged 66; died, Dec. 17, 1941, in Beardstown.

William Medwin Tucker, Long Beach, Calif.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1898; aged 75; died, Dec. 14, 1941.

William Guss Jefferson, Steelton, Pa.; Howard University College of Medicine, Washington, D. C., 1924; aged 43; died, Dec. 21, 1941.

Alan Callender Sutton, Laguna Beach, Calif.; Johns Hopkins University School of Medicine, Baltimore, 1916; aged 49; died, Dec. 4, 1941.



Killed in Action
At Pearl Harbor

RICHARD REDNER RALL, LT. (J. G.),
M. C., U. S. NAVY, 1909-1941

(See The Journal, January 24, p. 316)



Killed in Action
At Pearl Harbor

SAMUEL EARLE JOHNSON, COMMANDER,
M. C., U. S. NAVY, 1889-1941

(See The Journal, January 31, p. 398)



Killed in Action
At Pearl Harbor

WILLIAM RHINEHART SCHICK, 1ST LT.,
M. R. C., U. S. ARMY, 1910-1941

(See The Journal, January 24, p. 316)

Fred Warren Freeman, Saginaw, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; member of the Michigan State Medical Society; aged 84; died, January 21, of myocarditis and chronic nephritis.

Isaac High Shelly, Norristown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; served during World War I; formerly on the staff of the Montgomery Hospital; aged 55; died, January 2, of cerebral hemorrhage.

Ellis Ray Shilling ☉ Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1909; member of the American Society of Clinical Pathologists; aged 56; died, January 21, in the Grant Hospital of cardiovascular renal disease.

Henry Calvin Brown ☉ San Jose, Calif.; Rush Medical College, Chicago, 1887; for many years health officer of San Jose; aged 79; died, Dec. 30, 1941, in the San Jose Hospital of cerebral hemorrhage.

William Clark Fisher ☉ Williamson, Iowa; State University of Iowa College of Medicine, Iowa City, 1893; aged 71; died, January 17, in the Yocum Hospital, Chariton, of coronary occlusion.

James Moore, Brooklin, Ont., Canada; Trinity Medical College, Toronto, 1899; served during World War I; for many years registrar of deeds of Ontario County; aged 69; died, Dec. 17, 1941.

Gerald Joseph Forster, Belleville, Ont., Canada; University of Toronto Faculty of Medicine, 1910; aged 56; died, Nov. 27, 1941.

Alexander Raymond, San Francisco; College of Physicians and Surgeons of San Francisco, 1905; aged 72; died, Dec. 8, 1941.

James Edward Shafer, Berkeley, Calif.; Hahnemann Medical College of San Francisco, 1897; aged 78; died, Dec. 18, 1941.

Ida Belle Baker Page, Manchester, N. H.; Tufts College Medical School, Boston, 1903; aged 63; died, Nov. 9, 1941.

Frank J. A. MacDonell, Detroit; Detroit College of Medicine, 1899; aged 67; died, January 16, of heart disease.

Rufus L. Dooley, Montezuma, Ind. (licensed in Indiana in 1897); aged 79; died, January 25, of chronic nephritis.

John Carson Halpin, Springfield, Ill.; St. Louis Medical College, 1883; aged 84; died, January 20, of myocarditis.

Edwin S. Wiggers, Cincinnati; Pulte Medical College, Cincinnati, 1895; aged 68; died, January 11, of angina pectoris.

Ivadel Rogers, Pryor, Okla.; Eclectic Medical Institute, Cincinnati, 1898; aged 75; died, January 17, of pneumonia.

Leopold Deutsch, Cleveland; Starling Medical College, Columbus, 1896; aged 73; died in January.

Correspondence

TREATMENT OF HOOKWORM INFECTION

To the Editor:—On page 679 of the February 21 issue of *THE JOURNAL* the question of therapy of hookworm infection is discussed. The answer to the question begins as follows: "The drug of choice in hookworm disease is hexylresorcinol," and a little further down the following statement: "Hexylresorcinol in a single dose will remove 80 to 100 per cent of the parasites. . . ."

I believe that both of these statements are rather misleading and not strictly in accord with the scientific data available. Hexylresorcinol seldom removes more than 70 to 75 per cent of the hookworms present. Occasionally it removes more and often it removes less. It is rather expensive, particularly in view of the fact that hookworm infection occurs in the lower economic groups. Tetrachlorethylene, in general, is much more effective in the removal of hookworms. This drug will remove from 80 to 97 per cent of all the hookworms present; frequently it will remove 100 per cent of the worms. It is much cheaper than hexylresorcinol and has the added advantage that it is a liquid and therefore more easily administered to children.

Having done a large share of the anthelmintic work on hexylresorcinol, I am of course a strong advocate of this drug—especially for ascariasis and mixed hookworm and ascaris infections. I feel however, on a basis of a large experience, that it is not the drug of choice in the treatment of hookworm infection. For additional information on this subject I refer to "Intestinal Parasitic Worms in the United States—Their Diagnosis and Treatment" (*THE JOURNAL*, Sept. 1, 1934, p. 651).

H. W. BROWN, M.D., Chapel Hill, N. C.

SUGAR IN THE DIET

To the Editor:—Now it can be told! Today, when we are confronted by the inestimable nutritional boon of sugar restriction, cannot those who have the health of the nation in keeping, those who have pointed out that some forty million people in this country are not properly nourished, make it plain to the public as a whole that a large role in this deficit of minerals and vitamins is due to the excessive consumption of sugar—refined sugar which supplies energy without any other nutritive assets? The public should be brought to understand that sugar as such is no necessity, that the energy can better be derived from foods that carry other essential nutrients. Even the youngest artificially fed infants today are usually provided with extra carbohydrate in the form of corn syrup.

All those concerned with nutrition have long felt that the excessive consumption of sugar in this country is detrimental to the public health. Whether or not this affects the prevalence and severity of diabetes or the early decay of teeth or other specific disease, the mere fact that almost a quarter of the caloric intake of the nation (and will this estimate be greatly changed if Dr. John Rice's recent demonstration of the waste of 2,500,000 pounds daily in New York City proves true for the country as a whole?) is in the form of sugar makes a sufficiency of B vitamins almost impossible. Numerous reports have demonstrated the paucity of these essential nutrients in the diet in both the United States and Canada. The attempt in peace time to change such entrenched dietary habits has seemed to most workers practically hopeless, especially in view of the tremendous commercial interests concerned. Even the enrichment of refined sugar has been advocated.

But, now, in our peril, faced with the need of sugar for other purposes and of man power in all directions, cannot the nation benefit from an even greater restriction than is now contemplated? Cannot the government further the diversion of sugar crops to other more beneficial ones and find a better use for the men employed in the commercial manufacture and distribution of sweets? Cannot the numerous newspaper food columns make known the superiority of fresh and dried fruits in place of pies, doughnuts, candies, gum and sweetened canned fruits? Cannot the numerous society and moving picture women who want to contribute to the war effort make such desserts fashionable? And may we not plan to keep these benefits in peace time? May we not hope that some of the war time habits develop into permanent tastes if their benefit to the public health is clearly understood? Today, in time of war, every man, woman and child should know that in the restriction of sugar he is not just putting up with an inconvenience, such as foregoing silk stockings or new ice boxes, but is positively contributing to his own health and thus to the strength of the nation.

R. A. GUY, M.D., Boston.

THE de SCHWEINITZ MEMORIAL FUND

To the Editor:—Through the death of Dr. George de Schweinitz in 1938 the medical profession lost one of its greatest leaders, the city a splendid citizen and his many patients a devoted friend. It seems fitting that some permanent memorial be established in Dr. de Schweinitz's name in the University of Pennsylvania, where so much of his life was spent.

With the acquisition of his medical books by the School of Medicine, his friends and former associates plan to equip and furnish a room in the University Hospital to be known as the de Schweinitz Memorial Library. The cost of remodeling such a room, in which his collection of books can be properly housed and which will probably contain his portrait, is estimated at about \$5,000.

When completed, this library will be open to all physicians and medical students and will comprise one of the best collections of ophthalmologic literature in this country.

It is hoped that all his friends will contribute toward the realization of this goal, and the committee will gratefully accept any donation toward this sum, large or small.

EDMUND R. PURVES,
3446 Walnut Street, Philadelphia.

Chairman,
The de Schweinitz Memorial Fund.

"TRAUMATIC" SURGERY

To the Editor:—Pardon this dissertation from one who has repeatedly left himself open to the double charge of being a carping critic and a persistent purist. The present item is evoked by reading papers concerning a branch of the surgical art which is gradually coming into its own, assuming a scientific aspect and is now of special interest—"traumatic surgery."

I wish medical authors could be persuaded not to use tautologic terms. I wonder whether they ever consider the meaning of the word trauma (traw-mah). As I know it, trauma (Gr.) is a wound, an injury, inflicted, suddenly as a rule, by some physical agent. Then how can one justify "traumatic wounds," "traumatic injury" and the like as titles of articles? If I should be asked what other titles should be used I would reply that it is up to the authors, who are supposed to be aware of what they are writing about.

HUBERT A. ROYSTER, M.D., Raleigh, N. C.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

UNITED STATES PUBLIC HEALTH SERVICE

Examination Assistant Surgeon (medical only), commissioned corps
Examinations will be held as follows
U. S. Marine Hospital, New Orleans March 30
Liaison Office, U. S. P. H. S., Room 319, Grant Bldg., Atlanta, Ga. March 31
Apply Surgeon General U. S. P. H. S., Washington D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, March 21, page 1000

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16 18 Acting Sec, Dr B F Austin
519 Dexter Ave., Montgomery
ARIZONA * Phoenix, April 7 8 Sec, Dr J H Patterson, 826 Security
Bldg., Phoenix
ARKANSAS * Medical Little Rock June 4 5 Sec, Dr D L Owens,
Harrison Electric Little Rock, June 4 5 Sec, Dr Clarence H Young,
1415 Main St., Little Rock
CALIFORNIA * Written San Francisco, June 29 July 2 Oral exam-
ination (required when reciprocity application is based on a state certifi-
cate or license issued ten or more years before filing application in
California) Los Angeles May 20 Sec Dr Charles B Pinkham, 1020
N. St., Sacramento
DELAWARE Dover, July 14 16 Sec Medical Council of Delaware,
Dr Joseph S McDaniell 229 S State St Dover
FLORIDA * Jacksonville, June 22 23 Sec, Dr William M Rowlett,
Box 786, Tampa
GEORGIA Atlanta June Sec, State Examining Boards Mr R C
Coleman, 111 State Capitol, Atlanta
HAWAII Honolulu July 13 16 Sec Dr James A Morgan, 55
Young Bldg., Honolulu
ILLINOIS Chicago April 7 9 Superintendent of Registration, Mr
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INDIANA Indianapolis June 16 18 Sec Board of Registration and
Examination Dr J W Bowers 301 State House, Indianapolis
IOWA * Iowa City, May 11 13 Dir. Division of Licensure and Reg-
istration Mr H W Grefe Capitol Bldg., Des Moines
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16 17 Sec, Dr John A Evans 612 W 40th St. Baltimore
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istration in Medicine, Dr J Earl McIntyre 202 4 Hollister Bldg., Lansing
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Stewart State Capitol Bldg. Jefferson City
MONTANA Helena, April 7 8 Sec Dr Otto G Klein Trust National
Bank Bldg. Helena
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Applications must be on file not later than April 20 Sec Dr Frederick
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State St. Trenton
NEW MEXICO * Santa Fe April 13 14 Sec Dr Le Grand Ward
135 Sena Plaza Santa Fe
NORTH CAROLINA Raleigh June 15 Sec Dr W D James Hamlet
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VERMONT Burlington June 16 18 Sec, Board of Medical Registra-
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VIRGINIA Richmond June 17 20 Sec Dr J W Preston 301,
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Cheyenne

* Basic Science Certificate required

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Wisconsin Ave. Milwaukee

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Liability of Employer for Negligent First Aid Supplied by Nurse—On June 2, 1936 the plaintiff was struck in the right eye by a steel chip. He reported the accident to his employer and was directed to a nurse in charge of the defendant's first aid station for treatment. The nurse rubbed the plaintiff's eye with a piece of cotton and, it was alleged, negligently caused the steel fragment to be pressed beneath the surface of the eyeball so that it was not visible from outward inspection and could not be felt by the plaintiff when he moved his eyelid. From June 2 to July 12, 1936, the plaintiff was treated by the nurse, who repeatedly assured him that the eye would soon be all right, that the black spots which he continually saw would disappear and that it was not necessary for him to consult a physician or surgeon. By July 1, 1937, however, the eye had become so discolored and the vision so impaired that the plaintiff consulted physicians underwent an unsuccessful operation for removal of the chip and finally lost the sight in the eye completely. Subsequently the plaintiff filed a suit for damages against the defendant employer contending that the defendant was negligent in causing him to be treated by an unskilled, incompetent person after voluntarily assuming to render medical aid. From an order sustaining the defendant's demurrer and dismissing the complaint, the plaintiff appealed to the Supreme Court of Montana.

The defendant contended that the provisions of the workmen's compensation act were exclusive and that the plaintiff was barred from maintaining an action at law against his employer for damages for an injury arising out of and in the course of his employment. The court held that there was nothing in the act which deprived the plaintiff of the right to bring this action. In the first place, the act was exclusive only so far as accidents arising out of and in the course of the employment were concerned. The injury of which the plaintiff complained was sustained at the defendant's first aid station some distance from the mine and at a time when the plaintiff was not working for the defendant, therefore the injury caused by the negligent treatment by the nurse was not within the terms of the act. In the second place, said the court, the workmen's compensation act did not require an employer to furnish medical aid to its employee. For this additional reason, therefore, the plaintiff was not limited to a recovery under that act. Even though the defendant was not bound to furnish medical assistance for the plaintiff, the court continued, once it undertook to do so it was required to exercise reasonable care in the selection of a competent person to render such assistance and if, through its failure to exercise care and diligence the person selected was incompetent and unskilled and by reason of unskilled treatment the employee or servant was injured the defendant would be liable. In other words, having once accepted the responsibility of furnishing medical attention for the plaintiff, the defendant was under the same obligation as though he had been required to do so by law in the first place. Finally, the Supreme Court held that the plaintiff's cause of action was not barred by section 2909 of the Revised Codes which provides that an employer is not liable for any act in connection with the treatment or malpractice in the treatment of any injuries sustained by an employee. The gravamen of the plaintiff's cause of action, said the court was not based on malpractice in any sense of

the word; it was based entirely on the alleged negligence of the defendant in selecting an unskilled person to treat the plaintiff.

The Supreme Court therefore concluded that the plaintiff's action was not barred by the provisions of the workmen's compensation act and held that the defendant's demurrer should not have been sustained. The judgment of dismissal was therefore reversed and the cause remanded to the trial court.—*Vesel v. Jardine Mining Co.*, 100 P. (2d) 75 (Mont., 1940).

Workmen's Compensation Acts: Refusal of Employee to Submit to Operation.—While fighting a fire in the basement of a home, the plaintiff, a fireman, was exposed to smoke and gas and subsequently developed an inflammation of the trachea and lungs which caused violent coughing. An examination by physicians disclosed that he was suffering from a sub-sternal growth that apparently had been aggravated by the exposure. After being paid compensation for a period of time, the plaintiff submitted to a number of physical examinations by physicians appointed by the industrial commission. These physicians reported to the commission that the plaintiff could be restored to health if he would submit to an operation to remove the growth. The plaintiff refused to undergo the operation, and the commission ordered that compensation payments cease because of such refusal. The order of the commission having been affirmed by the district court, the plaintiff appealed to the Supreme Court of Colorado.

The plaintiff refused to submit to the operation because he was afraid it would prove fatal. He relied solely on the testimony of the physician of the Fire and Police Department, who was his only expert medical witness. That witness stated that he had examined the plaintiff many times and that in his opinion the growth in the plaintiff's neck was a sarcoma, the removal of which might bring on serious results. On the other hand, seven qualified and reputable physicians, appointed by the commission to examine the plaintiff, diagnosed his condition as a sub-sternal nontoxic goiter, not a sarcoma. They testified that this growth could be removed without much difficulty by means of an incision made in the plaintiff's neck. There was some testimony that the necessary operation would be more serious than an appendectomy or an operation for gallstones. The seven physicians were all agreed, however, that, although the operation to remove the growth was considered a major one, the risk involved was no greater than average and the plaintiff's chances of survival were at least 85 per cent. In conclusion, the seven physicians testified that, by means of the operation, the plaintiff could be practically restored as a working unit.

The plaintiff contended that, when an employee relies on the advice of his own physician and refuses to undergo a major operation attended by the hazards of loss of life, his refusal to submit is not unreasonable. The Supreme Court admitted that to be the rule but said that it could not be applied in this case, in the light of the evidence introduced, unless the court was willing to hold as a matter of law that all major operations involve serious risk to life or member. The plaintiff argued that the question of the reasonableness of his refusal to submit to the operation actually was a question of law and that the courts were not bound by the conclusion of the Industrial Commission. Chapter 97, Section 360 (1935 C. S. A.) provided, in part:

If any employee . . . shall refuse to submit to such . . . surgical treatment as is reasonably essential to promote his recovery, the commission may, in its discretion, reduce or suspend the compensation of any such injured employee.

The Supreme Court held that under the foregoing statute the industrial commission was vested with the authority to determine the reasonableness of the plaintiff's conduct. To sustain the plaintiff's contention, the court continued, would nullify that discretion. In view of the great weight of evidence sustaining the commission's holding, the Supreme Court concluded that the discretion lodged in the commission had not been abused and that the claimant should be required to submit to the proposed operation. The judgment for the defendant was therefore affirmed.—*Overton v. City and County of Denver et al*, 102 P. (2d) 474 (Colo., 1940).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for Thoracic Surgery, St. Louis, May 13-16. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.
- American Association of Anatomists, New York, April 1-3. Dr. Ehet R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.
- American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of Pathologists and Bacteriologists, St. Louis, April 23. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
- American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.
- American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Nashua St., Boston, Secretary.
- American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.
- American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.
- American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.
- American Psychiatric Association, Boston, May 18-22. Dr. Winifred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.
- American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.
- American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, Boston, March 31-April 4. Dr. Raymond N. Wieter, University of Minnesota Medical School, Minneapolis, Secretary.
- American Society of Biological Chemists, Boston, Apr. 7. Dr. A. K. Balls, Bureau of Agricultural and Engineering Chemistry, Washington, D. C., Secretary.
- American Surgical Association, New Orleans, Apr. 6-8. Dr. Charles G. Mixer, 319 Longwood Ave., Boston, Secretary.
- Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.
- California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.
- Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.
- Florida Medical Association, Palm Beach, Apr. 13-15. Dr. Shuler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
- Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.
- Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.
- Medical Library Association, New Orleans, May 7-9. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.
- Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.
- National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 12-13. Carlston R. Metcalf, 5 South State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.
- New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.
- North Carolina, Medical Society of the State of, Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.
- Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, Apr. 29-May 1. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.
- Pacific Coast Oto-Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dick, 450 Sutter St., San Francisco, Secretary.
- South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian P. Price, 105 West Cheves St., Florence, Secretary.
- South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107 1/2 Egan Avenue South, Madison, Secretary.
- Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Houston, May 11-14. Dr. H. Taylor, 1404 West El Paso St., Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fourteenth Annual Meeting, Held in Chicago, Nov. 7 and 8, 1941

The President, DR. LAWRENCE D. THOMPSON,
St. Louis, in the Chair

(Continued from page 1004)

Nutritional Macrocytic Hyperchromic Anemia

DRS. CARL V. MOORE and RICHARD VILTER, VIRGINIA MINNICH, M.S., and DR. TOM D. SPIES, St. Louis and Cincinnati: Ten patients with severe degrees of macrocytic hyperchromic anemia and with free hydrochloric acid in the gastric juice have been studied in the Nutrition Clinic at the Hillman Hospital during the summers of 1940 and 1941. In each instance there was a decided shift to younger forms of erythroid elements in the bone marrow, with a striking increase of megaloblasts. All the patients had diets grossly deficient in animal protein, and all but 1 either had or had had clinical manifestations of pellagra. Diarrhea was present in 8. Two had the clinical manifestations of nontropical sprue, 1 was found to have a beef tapeworm and 5 were relieved of their diarrhea when nicotinic acid was given. Eight of the 10 patients were male.

Intrinsic factor was shown to be present in 3 patients. Six responded submaximally when 250 Gm. of raw beef muscle was added to the diet. The meat, however, proved irritating and accentuated the diarrhea in each instance. Five patients were given a diet known to be deficient in animal protein and the B complex. After a control period of one week the crystalline members of the B complex were given both orally and parenterally. There was no change in the reticulocytes, no increase in red cells and no detectable alteration of the bone marrow. An 80 per cent alcoholic extract of beef muscle known to contain extrinsic factor was then given daily, and each patient responded with a reticulocyte rise and at least a slight erythrocyte increase. In several cases this period was followed by one in which the same quantity of beef muscle extract incubated with 100 cc. of normal human gastric juice was given daily; secondary reticulocyte responses were obtained. The parenteral administration of 4 to 10 U. S. P. units of highly purified liver extract given daily after the periods of observation just described produced in 9 cases a significant increase in reticulocytes and an accelerated red cell regeneration. In the remaining case the response had already been maximal.

These observations are interpreted as indicating that (1) macrocytic hyperchromic anemia without acilohrydria occurs not infrequently in regions in the Southern states where pellagra is endemic and (2) the anemia is produced both by a dietary deficiency of extrinsic factor and by poor absorption from the intestinal tract.

DISCUSSION

DR. CHARLES A. DOAN, Columbus, Ohio: I should like to ask Dr. Moore if splenomegaly occurred in any of the cases studied.

DR. FRANK H. BETHELL, Ann Arbor, Mich.: Were tests of hepatic function done in any of these cases?

DR. S. M. GOLDBLUMER, Ann Arbor, Mich.: Four years ago in Atlantic City Dr. Wintrobe gave a paper in which he proposed the theory that yeast is a substance which is similar to the erythrocyte material factor that is present in the liver. I think it has been subsequently shown that absence of the extrinsic factor could produce a similar picture. The extrinsic factor was important not only as to quality but as to quantity. Certain proteins could be administered and would give a response, while others could be administered without any response.

DR. CARL V. MOORE, St. Louis: Splenomegaly was not present in any case. Tests of hepatic function were not performed. In our earlier experiments we used beef muscle rather than brewers' yeast in order to avoid the effect which Dr. Wintrobe noted. In no case have we obtained a reticulocyte response to a daily dose of 200 Gm. of beef muscle when the administration was made to a patient with true Addisonian pernicious anemia. Dr. Goldblumer made reference to the fact that certain proteins apparently possess extrinsic factor activity. The 80 per cent alcoholic extract of beef muscle used in the later experiments was practically protein free.

Clot Retraction Time in Thrombophlebitis and Pulmonary Embolism

DRS. JOHN S. HIRSCHBOECK and WILLIAM L. COFFEY JR., Milwaukee: The clot retraction time, which is the measured interval between the complete formation of the clot and the beginning of its separation from the bottom or the sides of the test tube, was found to be shorter than ten minutes in 9 of 10 consecutive cases of pulmonary embolism. The clot retraction time in normal persons is usually between twenty-five and thirty-five minutes. Patients with thrombophlebitis frequently have a clot retraction time between ten and twenty minutes, but pulmonary embolism did not occur in these patients unless the time became shorter than eight minutes. The clot retraction time is short when the blood sedimentation rate is rapid and the volume of packed erythrocytes in the hematocrit is below normal. A rapid retraction time is most likely the result of an increase in both blood platelets and fibrin together with a lower than normal concentration of erythrocytes in the clot. The administration of heparin in amounts as low as 100 mg. a day has in some cases prolonged the clot retraction time to the normal range for as long as thirty-six hours. In other cases the effect has persisted for only twelve hours.

A rapid clot retraction time may explain why some thrombi, particularly those in postoperative phlebothrombosis, are dislodged so readily soon after formation to become pulmonary emboli. The retraction time becomes shorter than normal during the postoperative period, and if it falls to a level below ten minutes we consider the patient a possible candidate for pulmonary embolism and advise that he be treated prophylactically with small amounts of heparin until the clot retraction time is normal.

DISCUSSION

DR. NELSON W. BARKER, Rochester, Minn.: I should like to ask Dr. Hirschboeck if the clot retraction time remains fairly constant in the patient who has had postoperative thrombosis or pulmonary embolism. I should also like to ask whether he has measured the clot retraction time after operation in a large series of patients and has been able to predict the occurrence of thrombosis and embolism by means of this test.

DR. H. T. RICKETTS, Chicago: I should like to raise the question whether the mere fact that embolism had occurred might have influenced the clot retraction time. Are you able to produce thrombosis artificially in animals and thus lower the retraction time?

DR. JOHN S. HIRSCHBOECK, Milwaukee: In a normal person the clot retraction time, determined several times a week over an extended period, showed little fluctuation. Patients who have manifest thrombophlebitis and who have had episodes of pulmonary embolism may show considerable variations in the retraction time until their final recovery. The effect of heparin on clot retraction as well as on coagulation varies with individuals. Some require more heparin than others. I do not believe that the shortening of the clot retraction time is due to the pulmonary embolism itself, because in 1 case I found it practically as short before the embolism occurred as I did a few hours afterward.

The Use of Pectin Solution as a Blood Substitute, with Special Emphasis on Plasmapheresis Studies

DR. F. W. HARTMAN, VICTOR SCHELLING, DR. HENRY N. HARKINS, BROCK BRUSH and KENNETH WARREN, Detroit: The need for blood substitutes in the present national emergency is manifest. The limitations of whole blood, plasma, serum and acacia are well known. Blood elements are expensive and except in dried form lack preservability. Acacia, on the other hand, combines the disadvantages of forming extensive deposits in the liver with those of antigenic properties. The experimental use of pectin solution as a blood substitute in shock has been made in a series of 80 dogs after extensive bleeding, biliary peritonitis and plasmapheresis. In many of these experiments the blood pressure was maintained and hemoconcentration was prevented for periods of eight hours or more, depending on the dosage. Plasmapheresis was performed with reduction of the plasma protein concentration to as low as 1 per cent. Clinical use has been made of pectin solution in 50 cases, principally as a measure to prevent shock in operative procedures of the type in which blood transfusion had previously been used. The

responses to pectin compared favorably in some instances with those to blood.

Dry powdered pectin is wetted overnight with 95 per cent alcohol. The alcohol is then completely decanted, and cold calcium and magnesium free Ringer's solution is added in the proper amount to make a 0.75 per cent solution of pectin. The solution is stirred vigorously and left standing for three hours. Four cc. of a buffered phosphate solution of pH 6.0 (prepared from 285 Gm. of monosodium acid phosphate and 1,000 cc. of water) and enough 2.5 normal sodium hydroxide are added to each 1,000 cc. of pectin solution to bring the pH to 7.0. This brings the original pH of about 3.0 to 5.5.

DISCUSSION

DR. W. B. COOKSEY, Detroit: In the slides which Dr. Harkins showed after the use of pectin alone, the response in the blood pressure reading was a little slower than is usually seen—two hours. That is certainly slower than is obtained with adequate amounts of plasma. I wonder whether he would amplify this problem and state what the rest of the series showed. I know that Dr. Hartman and his associates have made a study of the toxicity of pectin, and it seems that it is not toxic. However, one must remember that it took physicians a long time to realize how dangerous acacia may be. It seems to me that one should be rather conservative regarding pectin at this time.

DR. E. S. GORDON, Madison, Wis.: I should like to ask whether the authors have made any observations regarding the ultimate fate of the pectin.

DR. HENRY H. HARKINS, Detroit: I will agree with Dr. Cooksey that in the slide referred to the blood pressure showed a slow response to pectin. In some of our other cases this slow response occurred also, but we do have cases in which there was a more rapid response. I can comment on Dr. Cooksey's second remark regarding the nontoxicity of pectin along with Dr. Gordon's question. Dr. Hartman performed experiments on the toxicity of pectin which can be summarized somewhat as follows: 1. Pectin does not seem to be permanently deposited in the liver as is acacia. 2. Pectin is temporarily deposited in the liver, but in dogs killed after three or four days there is no evidence of permanent pectin storage. 3. Pectin seems to be excreted in the urine, and its excretion is more or less quantitatively complete within thirty-six to forty-eight hours.

Sputum Studies in Pneumonia: The Selection of Therapy

DRS. ARTHUR W. FRISCH and ALVIN E. PRICE, Detroit: In a group of 293 cases of roentgenographically proved types I, II, IV, V, VII and VIII pneumonia the specific therapy was selected for each patient by means of sputum examinations. Supportive therapy, or an average dose of 35,000 units of serum, was given to 123 patients whose sputum contained 10 or less pneumococci per oil immersion field. The bacteremic incidence in this group was 11 per cent, and the mortality was 0 per cent. Sulfapyridine or sulfathiazole was given to 130 patients whose sputum contained from 11 to 50 pneumococci per field. The bacteremic incidence in this group was 37 per cent and the mortality rate 6 per cent. Combined chemotherapy and serotherapy was reserved for 24 patients whose sputum contained more than 50 pneumococci per field. The bacteremic incidence in this group was 80 per cent and the mortality rate 54 per cent. In a group of 16 cases miscellaneous therapy was switched from one form to another. The examination of Wright stained smears of rusty sputum proved to be a satisfactory method of differentiating the severe from the mild pneumococcal pneumonia.

DISCUSSION

DR. M. A. BLANKENHORN, Cincinnati: I should like to ask Dr. Frisch if he has made any observations on the presence of antigenic substance or immune body in the circulating blood as compared to its presence in the sputum. Will Dr. Frisch also state what it is that determines the rusty or bloody nature of sputum? What is there peculiar to his selected patients that makes them respond with rusty sputum? I am certain that Dr. Frisch's advice is extremely helpful in the selection of patients for therapy. I am wondering whether by more careful scrutiny of the patients with rusty sputum information perhaps may not be obtained that would be helpful in the treatment of patients who do not have rusty sputum.

DR. OSWALD H. ROBERTSON, Chicago: Since the observations of Drs. Frisch and Price on human pneumonic sputum have gone so far beyond those made by any one else, I can discuss them only with respect to certain analogous observations my associates and I have made in experimental canine pneumonia. We have observed that the severity of the pulmonary infection in the early stages of the disease is reflected in the number of pneumococci present in the bronchial exudate. In the dog with a fulminating infection, great numbers of pneumococci are present and little evidence of phagocytosis is seen. On the other hand, the bronchial exudate of the animal with a well localized lesion in a single lobe exhibits relatively few micro-organisms, and these are all within the phagocytic cells. Thus our observations of experimentally infected dogs would coincide for the first two or three days with those of Dr. Frisch on human beings. However, during the later stages of the canine disease the number of pneumococci in the bronchial exudate tends to diminish substantially, even though the disease may go on to a fatal termination. An exception occurs when new lobes are progressively involved. When following the evolution of individual lobar lesions we have found that the most fluid and pneumococcus rich exudate occurs early in the development of the lesion. After two or three days the exudate becomes thicker and the number of micro-organisms diminishes, probably chiefly as a result of phagocytosis. I should like to ask Dr. Frisch if, in the cases in which he observed many pneumococci late in the course of the disease, spread of the pneumonic process to other lobes was occurring.

DR. ARTHUR W. FRISCH, Detroit: I believe Dr. Robertson has answered Dr. Blankenhorn's question. We use rusty sputum because we are certain that it comes from the lung. Observations similar to those on the sputum have been made on serial smears of the lungs at autopsy. However, in some cases smears from the lungs have failed to reveal the presence of pneumococci, which indicates that the focus is elsewhere in the body. With regard to the relationship of clumping of pneumococci in the sputum and other known immune reactions, we have preliminary data suggesting that this phenomenon is more closely related to the presence of agglutinins in the blood than to the Francis skin test. We are now studying approximately 500 cases and are attempting to correlate the clinical course with the data on the sputum. I did not include type III pneumonia because the outcome in this type is determined by the amount of specific soluble substance produced by the pneumococci and not by the number of pneumococci present in the sputum.

The Effect of Temperature on the Transmission of Lymphocytic Choriomeningitis Virus by Mosquitoes

ALBERT MILZER, PH.D., Chicago: Transmission of lymphocytic choriomeningitis could be effected by *Aedes aegypti* only when mosquitoes of this type were incubated at temperatures ranging between 26 and 34 C.; no virus was detected in mosquitoes kept at 25 C. and lower or at 37 C. Best results in transmission were obtained at 28, 30 and 32 C. and occurred at intervals varying from seven to thirty-eight days following the infective blood meal. These results are not directly comparable to those of Coggeshall because he failed to indicate incubation temperatures in his transmission experiments. The results obtained in the present studies justify repetition of transmission experiments with certain virus diseases suspected of being insect borne, such as poliomyelitis and St. Louis encephalitis, with insect incubation temperatures more carefully controlled than in the past.

DISCUSSION

DR. A. W. FRISCH, Detroit: Did you find any evidence of multiplication of the virus in the mosquito?

DR. CARL G. HARFORD, St. Louis: I think this is a timely paper, especially since investigators from the west coast have reported obtaining the viruses of St. Louis encephalitis and horse encephalitis from mosquitoes caught in their natural environment.

ALBERT MILZER, PH.D., Chicago: No attempt was made to determine whether the virus multiplied in the mosquitoes.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Surgery, New York

55:1-188 (Jan.) 1942. Partial Index

- *Pilonidal Sinuses: Review of Literature and Report of 350 Cases. H. P. Kooistra, Grand Rapids, Mich.—p. 3.
- *Mortality and Morbidity in Surgery of Thyroid. C. G. Heyd, New York.—p. 18.
- Adrenal Apoplexy. M. J. Thorstad, Detroit.—p. 44.
- Maintaining Reduction in Oblique Fractures of Long Bones. J. P. Stump, M. C. Krepela and S. F. Stockhammer, New York.—p. 49.
- Diagnosis of Low Back Pain of Orthopedic Origin: Analysis of Sixty-Two Cases. E. A. Brav, Philadelphia.—p. 57.
- Malignant Synovium of Knee Joint. C. H. Snyder, Grand Rapids, Mich.—p. 67.
- Use of Pentothal Sodium for Induction of Anesthesia in Thyrotoxicosis. C. H. Long, A. Mickal and A. Ochsner, New Orleans.—p. 71.
- Delayed Metastases in Cancer of Breast. A. J. Chliko and H. Quastler, New Rochelle, N. Y.—p. 75.
- *Hypoxia—Hazard of Operating Room. D. H. Batten, Brooklyn.—p. 83.
- Melanoblastoma, with Special Reference to Metastatic Dissemination. H. H. Friedman and M. Lederer, Brooklyn.—p. 88.
- One Hundred and One Cases of Infections of Face and Neck Following Oral Pathology. G. R. O'Brien, Brooklyn, and L. R. Rubin, New York.—p. 102.
- Diagnosis and Localization of Intra-Abdominal Abscesses by Roentgenologic Methods. W. C. Beck, J. D. Koncky and M. Baker, Chicago.—p. 113.
- Experiences with Spool Cotton as Suture Material. P. Thorek, Chicago.—p. 118.
- Treatment and Cure of Seventy-Six Cases of Hydrocele by One Twin Injection of Lithium Salicylate and Quinine Hydrochloride and Urethane. J. C. Diamond, Fort William, Ont., Canada.—p. 121.
- Economic Considerations of Cosmetic Surgery. R. O. Renie, New York.—p. 126.

Pilonidal Sinus.—Kooistra reviews the literature, data from serial sections of 40 human embryos and 350 cases of pilonidal sinus. Sections of excised tissue were examined microscopically, and a questionnaire was sent to the 202 treated patients to determine the end result. The term pilonidal sinus or cyst is a misnomer, as only about half of the lesions contain hair. Pilonidal sinus is considerably more common than is generally supposed. The 350 lesions were encountered among 313,285 patients admitted to the University Hospital during fourteen years. Seventeen of the lesions were recurrences. The lesion is usually found in patients aged 20 to 25. Of the 350 lesions 258 occurred in males. Symptoms of the lesions developed earlier in the female than in the male patient; 40 per cent of the female patients were less than 20 years of age, as compared to 19 per cent of the male patients. This previously unreported fact apparently is of etiologic significance. Since the human female reaches puberty earlier, it appears that these lesions are activated by the sex hormones. The disease is restricted to the Caucasian race. A questionnaire study of the family history of 100 representative patients revealed a hereditary factor in 10 per cent. Evidence indicates an Anlage for this defect in the earliest stages of embryonic development. In 32 per cent of the patients there was a definite history of trauma, but in only 14 per cent did it occur within a month of the onset of symptoms. A study of associated and incidental diseases revealed that 4 patients had mental disorders, 6 skeletal congenital defects, 4 inguinal hernias, 4 diabetes, 6 pulmonary tuberculosis, 1 osseous tuberculosis, 3 syphilis, 7 associated hypertension, 3 nephritis, 3 arthritis and 2 furunculosis. Pain (in 84 per cent) and discharge (in 78 per cent) due to infection were the predominating symptoms. Recurrent abscesses and draining mid-line sinuses in the sacrococcygeal region were observed often. Of the 202 patients treated at the University Hospital, 117 had

had previous operative procedures. The pathologic picture is that of a dermal sinus with hair in about half the cases. All the sections showed evidence of acute or chronic inflammation. Treatment remains an individualized problem. Incision and drainage are indicated for any acute manifestation. The use of Carnoy's solution after incision has merit in selected cases. Excision with primary closure is advisable for the uninfected and the less extensive lesion. Excision and open packing are indicated for the more severe and the recurrent lesion. A prolonged healing time and recurrence are common problems of treatment. Replies to a questionnaire received from 89 patients whose lesion was excised reported "permanent cure" in 74 per cent. Data on patients in whom dye was used preoperatively favor its use to delineate the lesion.

Surgery of Thyroid.—Heyd states that whatever the etiologic factor or factors might be in hyperthyroidism the disease is not a single condition. It may manifest itself in a variety of clinical pictures with different pathologic entities. The indications for surgical intervention depend on the clinical manifestations, pressure symptoms and malignant changes. Overdosage and continuous administration of iodine preparations are to be discouraged. Iodine does not cure goiter; it aids preoperative treatment, controls symptoms and is of great value in crisis. The incidence of cancer of the thyroid is fairly constant, and if every patient with a nodular goiter is considered as a candidate for surgical intervention the incidence may be decreased. Good results are the rule in cardiac disabilities that are the result of toxic adenomas. In exophthalmic goiter surgical intervention is only one phase of treatment; a proper medical regimen and control of symptoms for not less than a year post-operatively are equally important. The basal metabolic rate is but one sign of hyperthyroidism, and it should never be over-emphasized. Vocal and respiratory difficulties that follow thyroidectomy are still a pressing problem to even the most expert surgeon.

Hypoxia.—Batten points out that most instances of hypoxia that occur in the operating room are the result of nitrous oxide anesthesia, which is the lightest anesthesia unless metabolic depressant drugs are used as adjuvants. The plane of anesthesia may be deepened through the diminution of oxygen the patient is permitted to breathe. When the concentration of oxygen in the inspired atmosphere is permitted to drop to less than 20 per cent the procedure should be termed asphyxia. When more relaxation is demanded than can be obtained by an 80 to 20 per cent nitrous oxide-oxygen mixture, the nitrous oxide should not be increased at the expense of oxygen but some more potent agent should be employed. Also hypoxia in the operating room at times arises from the injudicious use of pain relieving drugs, obstruction to a patent airway, deep Trendelenburg position, sharp angulation of the table in operations on the kidney, use of the gallbladder rest, persistent laryngospasm and spinal anesthesia, which decreases the oxygen in alveolar, arterial and venous systems. The author believes that attention to the following six factors will diminish the number of anesthetic accidents: (1) the avoidance of the promiscuous use of respiratory depressant drugs, (2) the avoidance of giving nitrous oxide in a concentration of less than 20 per cent of oxygen, (3) the disturbance of the patient's physiologic condition as little as possible, (4) the protection of the patient on his return to bed against aspiration of mucus and vomitus and from asphyxia from a relaxed tongue, (5) the administration of oxygen to any patient exhibiting signs of hypoxia in the operating room and (6) the avoidance of routine spinal anesthesia.

Arkansas Medical Society Journal, Fort Smith

38:139-158 (Dec.) 1941

- Résumé of Fever Therapy in Management of Syphilis. K. Phillips, Miami, Fla.—p. 139.
- Relief of Pain in Apical Lung Tumor by Resection of Cervical Sympathetic Ganglions on Involved Side. M. B. Bowman, Hot Springs National Park.—p. 144.

38:159-182 (Jan.) 1942

- Nature of Thyroid Disorders. J. H. Hayes, Little Rock.—p. 159.
- Hypertension. C. H. Finney, Fort Snelling, Minn.—p. 163.
- "Our American Heritage." J. L. McClellan, Camden.—p. 165.

Journal of Experimental Medicine, New York

75:1-134 (Jan.) 1942

- Periodic Examination of Sewage for Virus of Poliomyelitis. J. D. Trask and J. R. Paul, with technical assistance of J. T. Riordan, New Haven, Conn.—p. 1.
- Enduring Partnership of Neoplastic Virus and Carcinoma Cells: Continued Increase of Virus in V2 Carcinoma During Propagation in Virus Immune Hosts. J. G. Kidd, New York.—p. 7.
- Antigenic Relationship of Viruses of Meningopneumonitis and Lymphogranuloma Venereum. M. D. Eaton, W. P. Martin and M. Dorothy Beck, Berkeley, Calif.—p. 21.
- Further Study of Cross Reaction Between Specific Polysaccharides of Types III and VIII Pneumococci in Horse Antisera. M. Heidelberger, E. A. Kabat and M. Mayer, New York.—p. 35.
- Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination. G. K. Hirst, New York.—p. 49.
- Demonstration of Agglutinins for *Bartonella Bacilliformis*. C. Howe, Boston.—p. 65.
- Effect of Sulfapyridine on Development of Immunity to Pneumococcus in Rabbits. E. C. Curnen and C. M. MacLeod, New York.—p. 77.
- Comparative Diabetogenic Action of Hypophysis from Various Animals. B. A. Houssay, F. S. Smyth, V. G. Foglia and A. B. Houssay, Buenos Aires, Argentina.—p. 93.
- *Natural History of Experimental Poliomyelitis Infection: I. Studies on Centrifugal Spread and Elimination of Virus in Intrascapally Inoculated Rhesus Monkeys. A. B. Sabin and R. Ward, Cincinnati.—p. 107.
- Comparison of Erythrocyte Sedimentation Rates and Electrophoretic Patterns of Normal and Pathologic Human Blood. T. Shedlovsky and J. Scudder, New York.—p. 119.
- Studies Concerning Site of Renin Formation in Kidney: I. Absence of Renin in Aglomerular Kidney of Midshipman Fish. M. Friedman and A. Kaplan, San Francisco.—p. 127.

Natural History of Experimental Poliomyelitis Infection.—Sabin and Ward studied the spread of poliomyelitis in the central and peripheral nervous systems of 8 rhesus monkeys. They injected the M. V. virus into the sciatic nerve, collected nasal secretions on plugs of absorbent cotton every twenty-four hours during life, pooled the secretions collected from several monkeys and tested them for the virus. Tissues of animals dead from the disease were studied to ascertain the extent of the centrifugal spread of the virus. The incubation period was relatively short: paralysis was observed first on the third day in 3 monkeys, on the fourth day in 4 and on the fifth day in 1. The first rise in temperature occurred on the same day as the paralysis in 6 monkeys and on the day preceding the paralysis in 2. The appearance of paralysis first in the inoculated leg of 6 monkeys and in both legs of 2 is in accord with the usual course of the disease. The disease was permitted to run its full course to allow the greatest possible spread of the virus. The virus was not demonstrable in the nasal secretions of the infected rhesus monkeys during any stage of the preparalytic or the paralytic phase of the disease. Sabin's and Ward's observations indicate that by the time the terminal phase of the disease is reached the virus had not spread sufficiently either in the central nervous system, to involve the olfactory bulbs and the adjacent nasal mucosa, or peripherally, to affect the collateral sympathetic ganglions or the nerve cells of the parasympathetic system, the salivary glands and the pharyngeal wall about the tonsils. The negative results with the tonsils offer confirmatory evidence for the absence of the virus in the tissue spaces of the nasal mucosa and other regions whose lymphatics drain into these nodes. The finding of virus in the spinal cord of each monkey lends weight to the negative results with other tissues. Under certain circumstances (different from those of the present study) the presence of virus in these ganglions and tissues may be used as an index to the point of entry of the virus.

Journal-Lancet, Minneapolis

62:1-32 (Jan.) 1942

- Management of the Breech. W. A. Coventry, Duluth, Minn.—p. 1.
- Vitamins. E. H. Rynearson, Rochester, Minn.—p. 4.
- Tuberculosis Control Among College Students: Theoretical and Applied. C. E. Lyght, Northfield, Minn.—p. 7.
- The American Indian's Contribution: Food and Drugs. H. A. Burns, Ah-Gwah-Ching, Minn.—p. 12.
- The Selective Service System and the Practice of Medicine. R. A. Bier, Washington, D. C.—p. 15.
- Common Use of Female Sex Hormones. J. L. Conrad, Jamestown, N. D.—p. 18.
- A Student Health Auxiliary. W. H. York, Princeton, N. J.—p. 20.

Minnesota Medicine, St. Paul

25:1-80 (Jan.) 1942

- Present Status of Hormone Therapy. M. Hoffman, St. Paul.—p. 19.
- *Ten Cases of Paralysis Agitans Treated with Vitamin B₁₂. Charlotte L. Meller, Minneapolis.—p. 22.
- Present Day Treatment of Pneumonia. H. G. Wood, Rochester.—p. 24.
- Use of Chilled Blood, Blood Plasma and Serum. T. S. Seldon and J. T. Priestley, Rochester.—p. 28.
- Pharmacologic Shock Therapy at St. Peter. G. H. Freeman, A. S. Nissen and E. W. Miller, St. Peter.—p. 31.
- Hematology of Pernicious Anemia. C. Vandersluis, Bemidji.—p. 36.
- Tumors of Pituitary Gland. R. R. Cranmer, Minneapolis.—p. 38.

Pyridoxine for Paralysis Agitans.—Meller gave pyridoxine to 4 patients with postencephalitic and to 6 with idiopathic paralysis agitans. The patients were relief clients whose diets could have been deficient; they were given also brewers' yeast and cod liver oil tablets. Previous experience with these substances had no specific therapeutic effect. Pyridoxine was given daily in a dose of 50 mg., subcutaneously or intravenously, for ten days; then the dose was increased to 100 mg. for three or four days. The dose was then continued or decreased, depending on the patient's response. The patients responded promptly by improving to a degree beyond which even larger doses brought no benefit. After this improvement had been attained the patient was given 50 mg. subcutaneously on alternate days. As a partial control, 3 similar patients were treated with physiologic solution of sodium chloride; 1 thought that he felt better, but none showed any objective change. Only 1 of the 10 patients failed to respond in some measure. The improvement in the others consisted of a feeling of relaxation, decrease of spasticity and disappearance of pain and an increased feeling of well-being. Although no objective change in tremor was noticeable, the patients reported that they had better control of their muscles (the arms and legs moved with more assurance, and the tremor was not so annoying).

Nebraska State Medical Journal, Lincoln

27:1-40 (Jan.) 1942

- Priceless Heritage of Medical Freedom. E. H. Skinner, Kansas City, Mo.—p. 1.
- Chemotherapy in Pneumonia. A. V. Stoesser, Minneapolis.—p. 5.
- Management of Patients with Renal Calculi. C. C. Higgins, Cleveland.—p. 10.
- *Pyogenic Infections of Hand: Lymphatic, Tendon Sheath and Fascial Space Infections. M. Grodinsky, Omaha.—p. 13.
- Infections of Throat—Acute Septic Sore Throat. L. P. Coakley, Omaha.—p. 18.

Pyogenic Infections.—Grodinsky states that of the three major types of pyogenic infections of the hand (lymphatic, fascial and tendon sheath) acute lymphatic infections are most dangerous to life but the least likely to lead to permanent disability. The main principle in their treatment is to avoid incision before the infection has become localized. Permanent disability from infections of the tendon sheath may be reduced to a minimum by early and adequate surgical treatment. Likewise in infections of the fascia early and proper surgical treatment should prevent permanent loss of function.

Philippine Medical Association Journal, Manila

21:535-608 (Nov.) 1941

- Highlights of Weekly Staff Clinical Conferences in 1940. J. Albert and P. Ignacio, Manila.—p. 535.
- Sulfathiazole in Treatment of Surgical Infections and Complications. F. C. Guzman and E. Garcia, Manila.—p. 563.

Southern Surgeon, Atlanta, Ga.

11:1-78 (Jan.) 1942

- Minor Urologic Procedures of Value to General Practitioner. A. I. Folsom and H. A. O'Brien, Dallas, Texas.—p. 1.
- Carcinoma of Rectum, Rectosigmoid and Sigmoid: Selection of Cases for One Stage Combined Abdominoperineal Resection. C. M. Mayo and C. P. Schlicke, Rochester, Minn.—p. 14.
- Intra-Abdominal Application of Sulfanilamide in Acute Perforative Appendicitis: Preliminary Report. M. B. Wellborn and K. F. Stubbins, Evansville, Ind.—p. 24.
- Controlled Fractional Spinal Anesthesia. W. E. Lee, O. C. King and H. L. Farrell, Philadelphia.—p. 28.
- Probing Common Duct Through T Tube Four Weeks Postoperatively. J. P. Barnes, Houston, Texas.—p. 35.
- Use of Shropshire Technique in Watkins Chauta Operation for Uterine Prolapse. J. T. Moore, Houston, Texas.—p. 42.
- Torsion of Appendix as Possible Causative Factor in Gangrenous Appendicitis. S. O. Mosley, Selma, Ala.—p. 47.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London 53:333-364 (Dec.) 1941

- Growth of Epithelium in Tegumentary Tissues: Part III. Healing of Cutaneous Wounds, Regeneration. H. Leslie-Roberts.—p. 333.
Organized Treatment for Scabies. G. H. Percival.—p. 346.
Human Necrobacillosis: Case. G. Bamber.—p. 351.

Journal of Endocrinology, London 2:263-502 (Sept.) 1941. Partial Index

- Effect of Testosterone on Responsiveness of Immature Gonad to Chorionic Gonadotropin. H. Selye.—p. 352.
Curve of Elimination and Excretion of Chorionic Gonadotropin Derived from Rate of Hormone Recovery and Anthrathione Consumption. B. Zondek, F. Sulman and J. Sklow.—p. 362.
Inunction of Sex Hormones on Skin. C. W. Emmens.—p. 368.
Precipitins in Serum of Rabbits Immunized Against Purified Serum Gonadotropin. M. van den Ende.—p. 403.
Hair Loss as Deficiency Test of Medullectomy in Rats. L. Stein and E. Wertheimer.—p. 418.
Effect of Estrogenic Stimulation on Human Prostate at Birth. E. P. Sharpey-Schaefer and S. Zuckerman.—p. 431.
Precursors of Estrogens. C. W. Emmens.—p. 444.
Anterior Pituitary Gland and Protein Metabolism: Parts I, II and III. D. P. Cuthbertson, T. A. Webster, F. C. Young and G. B. Shaw.—p. 459.
Quantitative Study of Effects of Implanting Tablets of Estrogens and Androgens in Rats. R. Deaneley and A. S. Parkes.—p. 487.

Lancet, London

2:657-688 (Nov. 29) 1941

- High Stillbirth and Neonatal Mortalities. D. Baird and J. F. B. Wyper.—p. 657.
*Relationship of Exanthematic and Endemic Typhus. G. M. Findlay.—p. 659.
Radiologic Visualization of Eustachian Tube. G. F. Rees-Jones and J. E. G. McGibbon.—p. 660.
*Brachial Neuritis Occurring in Epidemic Form. R. Wyburn-Mason.—p. 662.
Resistance of Influenza Virus to Drying and Its Demonstration on Dust. D. G. F. Edward.—p. 664.
Continuous Administration of Ethyl Chloride. U. M. Westell.—p. 666.
Kondoleon Operation for Chronic Lymphedema. E. D. Telford and H. T. Simmons.—p. 667.
*Sulfapyridine in Filariasis: Further Experiences. K. V. Earle.—p. 667.
Bilateral Trilocular Heart with Atresia of Mitral Valve. E. W. Walls.—p. 668.

Exanthematic and Endemic Typhus.—Findlay reports the accidental infection of 2 laboratory workers with endemic typhus during work with active endemic typhus rickettsias. The infection in 1 worker more than 40 was apparently modified because of the presence of some degree of immunity against exanthematic typhus in contrast to the other worker, who was 18. This unrehearsed human experiment, the author believes, bears out the contention that there is a close antigenic similarity between the rickettsias of exanthematic and endemic typhus.

Brachial Neuritis in Epidemic Form.—Wyburn-Mason discusses the occurrence of brachial neuritis in 42 patients within eight months. The patients were between 30 and 77 years of age. The epidemic began in the winter and persisted into the spring and the summer. The clinical features (pain, burning and tenderness in the region of the cords of the plexus and over the ulnar nerve, sensory changes and motor weakness) suggest that the anterior primary divisions of the spinal nerves from the third cervical to the fourth dorsal inclusive, in whole or in part, were involved. Usually the upper part of the plexus, and the skin segments served by the fifth and sixth cervical nerves, were affected; but careful examination also revealed sensory changes of a wider distribution. The tendon reflexes in the affected limb were usually increased or decreased. The severity of the disorder varied from patient to patient. The ultimate outlook is good, and the milder types of neuritis improve soon, but the more severe ones have so far been refractory to treatment. The similarity of the disorder in all the patients suggests that the condition is the result of an infection and that the site of the lesion is in the nerves at a point distal to the posterior primary divisions. The cause is not known, but

it seems to be a clinical entity, possibly the result of a heretofore undescribed infection appearing for the first time in this war. No patient frequented public air raid shelters.

Sulfapyridine in Filariasis.—Earle cites 3 further cases of lymphadenitis complicating filariasis successfully treated with sulfapyridine. The striking beneficial effect of sulfapyridine on the lymphadenitis probably indicates that the complication is due to secondary streptococcal infection rather than to the filariasis itself. The number of microfilariae in the blood stream is not reduced by the drug.

Quarterly Journal of Medicine, Oxford 10:283-334 (Oct.) 1941

- *Epidemic Myositis, with Neuritis, Erythema and Meningeal Symptoms. D. Williams.—p. 283.
*Simmonds' Disease or Panhypopituitarism (Anterior): Its Clinical Diagnosis by Combined Use of Two Objective Tests. R. Fraser and Patricia H. Smith.—p. 297.

Epidemic Myositis.—Williams reports the occurrence in 5 men of the Royal Air Force in the early summer of 1940 of a previously undescribed syndrome: an acute febrile illness with symptoms and signs of myositis and meningitis. The syndrome occurred at one station only and followed inoculation with tetanus toxoid and T. A. B. vaccine. The syndrome did not develop in thousands of other recruits similarly inoculated. In addition to the syndrome, 4 of the 5 patients had involvement of the peripheral nerves, 3 had an erythematous rash and 3 had visual disturbances. All the patients recovered completely, and no causal agent could be isolated. It is suggested that the syndrome was probably caused by a virus which may have been activated by the T. A. B. inoculations. The illness began within forty-eight hours of the inoculation and lasted for less than a week. In 1 patient it was complicated by acute gastroenteritis and in another 1 by a pleural effusion. The sterile cerebrospinal fluid of 3 men contained an excess of lymphocytes and polymorphonuclear leukocytes. All other investigations gave negative results.

Simmonds' Disease or Panhypopituitarism.—Fraser and Smith used the insulin tolerance test and a urinary 17-ketosteroid assay for 10 patients to distinguish Simmonds' disease, or panhypopituitarism, from anorexia nervosa and myxedema. The tests furnish a reliable and objective method for diagnosing Simmonds' disease during life. The tests were applied to 15 other patients with allied syndromes or less definite pituitary defects: primary myxedema and anorexia nervosa. In the 10 patients with panhypopituitarism the insulin tolerance test gave a characteristic curve: after a normal initial fall of blood sugar there was a failure or a delay in the usual spontaneous return. The response to epinephrine was usually abnormally slight but varied in accordance with the degree of hypoglycemic unresponsiveness (insulin hypersensitivity), that is between 80 and 47 per cent. To a certain extent it appeared that the degree of failure in the return of the blood sugar corresponded to the clinical degree of pituitary failure. Similar abnormal insulin tolerance curves may be found in hyperinsulinism and Addison's disease and possibly with severe hepatic disease or malnutrition. The urinary 17-ketosteroid assay, with one exception, was zero (less than 0.5 mg. in twenty-four hours). At least two assays were done for each patient. The only universal symptoms of the 10 patients with panhypopituitarism were hypogonadism and asthenia; the only universal signs, other than those of hypogonadism, were some cutaneous atrophy and loss of most or all of the axillary hair. The basal metabolic rate was low but the serum cholesterol often high. Four of the 8 patients with anorexia nervosa gave a normal reaction to the insulin tolerance test and 3 one similar to that found in panhypopituitarism, and in the 3 patients with primary myxedema the test showed a slow initial fall or insulin resistance. The 17-ketosteroid assays on 4 of the patients with anorexia nervosa gave results ranging from 2.7 to 14.7 mg. in twenty-four hours. These 4 patients were those with a reaction to the insulin tolerance test indistinguishable from that seen in panhypopituitarism. The assays of the patients with primary myxedema varied from zero to 1.7 mg. It is concluded that by the combined use of the two tests panhypopituitarism (anterior) producing even fairly mild symptoms can be distinguished from allied syndromes.

Arch. Internat. de Pharmacodyn. et de Thérap., Ghent

66:243-378 (Sept. 30) 1941. Partial Index

Experimental Study on Action of Hemostatics on Bleeding Parous States Following Administration of Sodium Polyanehtolsulfonate. G. Derouaux.—p. 245.

Experimental Studies on Mechanism of Adrenalinohloroformic Syncope. L. Dautrebande and R. Charlier.—p. 257.

Influences of Aneurin and of Acetylaurin on Action of Different Pharmacologic Substances on Uterus and Intestine. R. Dufait.—p. 274.

Supposed "All or None Law of Anesthesia." H. Winterstein and H. Derman.—p. 293.

Contribution to Study of Hypnotics with Paralyzing Effect on Thalamic Centers. J. La Barre and G. Kettenmeyer.—p. 305.

*Action of Toad Venom on Bleeding Time. G. Derouaux.—p. 325.

Action of Toad Venom on Bleeding Time.—Derouaux points out that extract of the parotid gland of the toad has been recommended for treatment of hemorrhage. The presence of epinephrine in the preparation seems to justify this. Having verified the favorable influence of the medulloadrenal hormone on the bleeding time, the author decided to submit to experimental control the action on the bleeding time of bufotalin, bufotenin and epinephrine, administered in the form of a total extract. He found that, in spite of the presence of epinephrine (extremely small quantity), besides the bufotalin and bufotenin, the total extract of the parotid gland of the toad (*Bufo bufo*) does not exert any hemostatic action in rabbits. On the contrary, in relatively large doses (1 cc. of a 1:30 solution) toad venom strongly impedes the mechanism of spontaneous arrest of hemorrhage.

Schweiz. Ztschr. f. Pathol. u. Bakteriöl., Basel

4:321-410 (No. 5) 1941. Partial Index

Role of Calcium in Microbic Dissociation. J. Bordet and P. Bordet.—p. 321.

Question of Organ Specificity of Renal Extracts. H. Bloch.—p. 332.

*Modified Typhoid, Paratyphoid, Tetanus Vaccine. C. Hallauer and R. Regamey.—p. 350.

Mode of Extrusion of Schistosome Ova from Blood Vessels into Tissues. E. Kohlschütter and E. Koppisch.—p. 357.

Properties of Brain Antigens and Their Antiserums. J. H. Lewis.—p. 370.

Immunization Experiments with Steroids. H. Mooser and R. K. Grillich.—p. 375.

Unfavorable Effect of Specific Antiserum on Active Immunization of Guinea Pigs. W. Mutsaers and J. Robert.—p. 381.

Etiology of Pustulosis Vacciniformis Acuta. S. Seidenberg.—p. 398.

New Modified Typhoid-Paratyphoid-Tetanus Vaccine.—Hallauer and Regamey point out that Ramon's typhoid-paratyphoid-tetanus vaccine has the disadvantage of eliciting local and general reactions and of impairing the work capacity for one or two days. In the presence of allergy, vagotonia, rheumatism or tuberculosis it may produce complications. These disadvantages may be obviated by substituting, for the customary bacillary suspensions of typhoid-paratyphoid, endotoxoids that have been detoxified by solution of formaldehyde. The composition of 1 cc. of such a modified triple vaccine is as follows: 0.66 cc. of tetanus toxoid and 0.33 cc. of *Salmonella* endotoxoid (treated with solution of formaldehyde) corresponding to 1,600 millions of typhoid bacilli, 1,200 millions of paratyphoid B schottmüller bacilli, 600 millions of paratyphoid B Breslau bacilli and 600 millions of paratyphoid A bacilli. The efficacy of this vaccine was compared with that of Ramon's combination vaccine in guinea pigs and in human subjects. The modified vaccine was as effective against tetanus and *Salmonella* infections as Ramon's original vaccine. It is less toxic and causes milder reactions, yet the antibody titers of the persons vaccinated with it are as high as those of persons inoculated with Ramon's vaccine.

Boletín de la Liga Contra el Cáncer, Havana

16:329-360 (Nov.) 1941. Partial Index

*Cancer of Prostate, Acid Phosphatase of Blood Serum and Castration. L. F. Ajamil.—p. 333.

Cancer of Prostate.—Reports in American literature and Ajamil's own observations suggest that acid phosphatase in blood serum is greatly increased in all cases of carcinoma of the prostate with metastasis to bone. The metastatic spread of the tumor can be surmised from the level of acid phosphatemia, even if the metastasis cannot be visualized by roentgen examina-

tion. The development of metastasis to bone in cancer of the prostate is stimulated by acid phosphatases in the blood serum, the increase or diminution of which is controlled by the testicular hormones. Effects of testicular hormones on the acid phosphatase of blood serum and the relation between acid phosphatase in the blood and metastasis to bone is demonstrated by the fact that castration or continued administration of estrogens causes diminution of acid phosphatemia, with a parallel improvement in the general condition of the patient and a diminution of symptoms of metastasis to bone, whereas administration of androgens aggravates the symptoms and increases the acid phosphatemia. Cosmetic bilateral castration is the operation of choice. It is performed with the patient under local anesthesia and consists in opening the tunica albuginea, removing the testicles and injecting a small amount of sulfanilamide within the empty scrotum and suturing without drainage. A small hydrocele, of about 30 cc., replaces the testicle. The operation controls the spread of the bone metastasis and improves the general condition of the patient. Whether the hydrocele will be permanent remains to be seen.

Revista Chilena de Pediatría, Santiago

12:761-834 (Oct.) 1941

*Value of Centers of Ossification in Roentgenologic Diagnosis of Rickets. J. Schwarzenberg L., E. Valle O. and A. Aguilera.—p. 761.

Tuberculous Reinfection in Children and Adults. J. Peña Cereceda and M. Felman.—p. 791.

Centers of Ossification in Diagnosis of Rickets.—Schwarzenberg and his associates aimed to determine the diagnostic value of tardiness in appearance and development of centers of ossification in rickets. On the basis of their clinical observations they concluded that rickets retards the appearance of centers of ossification in direct relation to the intensity of the disease. The absence of carpal centers before the tenth month of life is of no value for the diagnosis of rickets. After ten months its value is relative and should be judged together with the rest of the symptoms. The defects in the structure and size of the centers of ossification have diagnostic value at any age. Certain dystrophies seem to be the cause of the retarded appearance of nuclei of ossification. In cases in which the diagnosis is doubtful the vitamin "push" test (administration of a single large dose of vitamin D) is frequently capable of clarifying the cause of the absence or the defective structure of the centers. The sudden and disproportionate appearance of centers or the increase in ossification fortifies the roentgenologic diagnosis of rickets.

Wiener klinische Wochenschrift, Vienna

54:745-760 (Sept. 5) 1941

*Tuberculosis of Bones and Joints. A. Wittek.—p. 745.
Endometriosis of Urinary Bladder. K. Henning.—p. 750.

Tuberculosis of Bones and Joints.—Wittek observes that children with tuberculous spondylitis may cry out at night and complain of abdominal pains, or of pain in the knee. Peculiarities in walking, avoidance of bending and turning and Baeyer's symptom are significant. These signs, however, may be produced by lesions other than tuberculous ones. Roentgenologic examination of the spine may give negative results in the early stages of tuberculous spondylitis. Differentiation of tuberculous spondylitis from other spinal disorders, such as osteomyelitis, typhus spondylitis, lymphogranulomatosis, gumma and tumor metastasis may be difficult. The possibility of military dissemination and of the development of tuberculous meningitis makes the prognosis grave. Fistula formation is an unfavorable sign. Tuberculosis of bones and joints is not a local process but a manifestation of a generalized process. For this reason the treatment must be general. Conservative treatment, with emphasis on fresh air and heliotherapy, has given good results, but long duration is one of its disadvantages. The author recommends conservative treatment for growing patients whenever possible and resorts to surgical intervention only in exceptional cases. Thus he may remove a juxta-articular focus to avoid perforation into a joint. Resections are never done for children, but for adolescents arthrodesis of the hip joint may be done to hasten recovery. For adults surgical treatment is employed (1) to save life or (2) to reduce the duration of the treatment.

Book Notices

The Hospitals Year-Book, 1941: An Annual Record of the Hospitals of Great Britain & Ireland Incorporating "Burdett's Hospitals & Charities," Founded 1889. Issued under the auspices of the Joint Council of the Order of St. John and the British Red Cross Society and the British Hospitals Association (Incorporated). Sub-Editor: A. E. Ceadel, F.S.S. Cloth. Price, 22s.; \$4.40. Pp. 299, with illustrations. London: Central Bureau of Hospital Information, 1941.

The Hospitals Year-Book is a classified directory of hospitals and related institutions throughout Great Britain and a compendium of knowledge on hospital topics. The directory section presents names, addresses, persons in charge and, with the use of symbols and columns, a truly amazing amount of useful information about hospitals and related institutions in Great Britain and overseas. Separate directories include voluntary hospitals, municipal hospitals, maternity hospitals and homes, mental hospitals, institutions for the chronic and incurable, and convalescent hospitals and rest homes. There also is a long list of contributory schemes and funds, and names of examining bodies. The service of the British hospitals in war times is well outlined by authoritative descriptive articles on the bombing of hospitals (illustrated), war shelter hygiene, regionalization of hospitals, financial review of voluntary hospitals and the future of voluntary hospitals. There is much information of special interest to hospital administrators, ranging from purchase tax to road traffic accidents. This issue of the Year-Book contains many features of special interest and help to Americans who are connected with the service of hospitals in defense and their protection.

Standard Bodyparts Adjustment Guide: Traumatic Cases, Occupational Diseases, Disability Evaluations, Medical Fees, Statutory Digests. Fabrikoid. Price, \$15, including ten years' revision service. No pagination, with illustrations. Chicago: Insurance Statistical Service of North America, 1941.

This loose-leaf manual, compiled by the Insurance Statistical Service of North America, will strike many physicians and others as a particularly convenient compilation of a great many clinical and administrative aspects of disability evaluation and accident and disease indemnification. The material is not designed to appeal to physicians alone and, indeed, many of the anatomic charts and much of the medical data presented are directed at interested nonprofessional groups, and of these principally insurance adjusters. In case of troublesome appraisal of working or earning power after accident or disease, the physician will still be obliged to consult the more extended and standard reference works in this field. The discussion of fees contained in this book can be studied with profit by nearly every physician who comes in contact with compensation problems. The method employed is to list in parallel columns the minimum, maximum and mean average fees for specific medical procedure, including those established for laboratory, x-ray, dental, special consultation and after-care. Subject matter is drawn from fee schedules adopted in eighteen widely diversified states. To be sure there are two schools of thought about fee schedules, the serious objection being that minimum rates tend to become fixed as maximum, no matter how much extra care or skill has been necessary in the unusual or refractory case. Nevertheless, since three levels of fees are included, dependable listings of this kind may be useful in combating the insurance organizations which habitually shave fees because the income is certain or which habitually shop around for the cheapest available medical service. Other helpful sections of the book cover the occupational diseases, listing the character of exposure and symptomatology and a final summarization of the workmen's compensation and occupational disease acts of all American jurisdictions. Here again the data are conveniently arranged for ready reference and appear dependable enough for all ordinary purposes. If information in greater detail is required, recourse had better be taken to official documents. For example, it is indicated that Michigan has no rules or regulations relating specifically to compensation for hernia. Actually, hernia is listed in the schedule of occupational diseases in that state.

You Too Can Have a Baby (A Plan for Parenthood). By Abner I. Weisman, M.D., Adjunct Gynecologist to the Jewish Memorial Hospital, New York. Foreword by Dr. Max Huhner. Cloth. Price, \$2. Pp. 256, with 14 illustrations. New York: Liverlight Publishing Corporation, 1941.

The author states that his purpose in writing this book is to help couples who wish to have a baby and are unable to of their own volition, to elevate the standards of education regarding sex and fertility, to correct many myths and much misinformation and to provide a source book for the layman who is interested in the problems of fertility.

The first thirteen chapters of the thirty-four in the book deal with the anatomy and physiology of reproduction, fertilization, pregnancy, confinement and labor. There are some inaccuracies in the text which should be corrected in the next edition. For example, on page 44 the author states that "medical authorities are of the opinion that the two ovaries alternate each month in expelling eggs." On page 88 he states that the breaking of the "waters" is the forerunner of the real labor, whereas often the membranes do not rupture until the end of the first or second stage of labor. On page 85 he states that intercourse should be refrained from "almost completely" in the last two months of pregnancy, and on page 105, in instructions to the prospective parents, he writes "during the last month of pregnancy, sexual intercourse is forbidden."

Chapters 14 to 19 deal with sterility and its causes, with a discussion of the examination of both husband and wife, including the methods of examination of the semen and essential tests for the wife. Chapters 19, 20 and 21 deal with the treatment of sterility, including instructions to the couple as to the optimum time for intercourse and methods which may be found helpful. The author then discusses venereal diseases and sterility, habitual abortion, ectopic pregnancy and sterility following stillbirths. On the last named subject he states that erythroblastosis fetalis is not likely to occur with a subsequent baby. This is contrary to the accepted belief. The last chapters deal with artificial insemination with semen from the husband or a donor, the medicolegal aspects of artificial insemination, adoptions and the social aspects of the barren couple.

While the problem of sterility is vitally interesting to many childless couples, and while this book is a contribution toward their help, it is not completely satisfactory for its purpose. The title is misleading, as the author himself states that only a portion of the sterile couples in this country can be helped, by scientific means, to have a baby.

Eagleton's Index and Abstracts of Literature on Progress in Intracranial Lesions Related to Aural and Nasal Conditions. Published in *Archives of Otolaryngology*, 1925, 1926, 1927, 1928, 1929, 1932, 1937, 1940. Published for Gratiuitous Distribution to American and British Otolologists in the Interest of Anglo-American Unity, and to Commemorate the Enactment of the Lend and Lease Law—"a New Magna Carta" of Democracy's International Cooperation, by Wells P. Eagleton. Edition limited to 1,000 copies. Paper. Various pagination, with 2 illustrations. Newark, N. J., 1941.

For fifteen years the author abstracted literature pertaining to advances in the knowledge of intracranial states in relation to conditions of the ear, nose and throat. The first half of this volume is an assembly of the author's thoughts or facts concerning these numerous contributions. The other half of the volume comprises a reprinting of papers by Dr. Eagleton which have been published in the *Archives of Otolaryngology* during the last several years. The author is distributing this edition gratuitously to American and British otologists in the interest of Anglo-American unity. His aim also is to make accessible to sincere workers in this field a compilation of recent literature on borderline subjects pertaining to otology or rhinology and to neurology or neurosurgery, a field in which the author is internationally known.

The Toxemias of Pregnancy. By William J. Dieckmann, M.D., Associate Professor of Obstetrics and Gynecology, The University of Chicago. Chicago. Cloth. Price, \$7.50. Pp. 321, with 53 illustrations. St. Louis: C. V. Mosby Company, 1941.

The toxemias of pregnancy are probably as old as medicine itself. The author's monograph is a testimonial not only to the important advances that have been made in the field but also to our lack of knowledge. Dieckmann has exhaustively considered every aspect of the subject and has included his own

extensive studies as well. He points out the numerous controversial factors which make the problems involved so perplexing and attempts to correlate the chemistry, pathology, physiology, pharmacodynamics, hormones and constitution according to their places in the field. With minor exceptions he has carefully presented practically all of the work that has been done up to now. The most important chapter in the book is that on physicochemical determinations. The material is exceedingly complicated and this probably explains why so few obstetricians per se have made contributions to the subject. A good part of the research that is taking place is in the hands of the chemists and internists, and although this is entirely justifiable it suggests that much more may be accomplished if these workers could be combined as a team. The monograph is deserving of the highest praise. The author has presented his subject clearly. Numerous charts, graphs and case reports illustrate his careful conclusions. The chapter on treatment is excellent. It is recommended to the entire profession, but to the obstetrician it should prove invaluable.

Venereal Diseases. By E. T. Burke, D.S.O., M.B., Ch.B., Director of L. C. C. (Whitechapel) Clinic, London. Cloth. Price 30s. Pp. 549, with 141 illustrations. London: H. K. Lewis & Co., Ltd., 1940.

As is customary in many of the European countries, this volume is devoted not only to syphilis but also to gonorrhea, trichomonas infections, chancroidal infections, paradenitis (lymphogranuloma venereum) and granuloma inguinale. Most of the comments on the volume will be limited to the subject of syphilis.

As the author himself states, many of the opinions are at variance with general teaching. For example, this is true of the lipid concept of syphilis and of the mode of action of arsphenamine and bismuth and of the evaluation of antisyphilitic therapy. Unfortunately, space does not allow discussion of these, particularly of the first, which is at least a thought provoking approach to syphilis and its spread in the body. He divides syphilis into acute and chronic stages. Under the former one finds first degree, seronegative type; second degree, seropositive type; third degree, general secondary type, and fourth degree, up to complete disappearance of the secondary manifestations. Under chronic syphilis there are fifth degree, endosyphilis (latent syphilis); sixth degree, tertiary, cardiovascular and visceral, including neurosyphilis; seventh degree, neurosyphilis including meningeal, and, eighth, prenatal syphilis.

Burke is a firm believer in the use of continuous therapy as advocated generally in this country. Moreover, he is a strong proponent of fever therapy in central nervous system syphilis and in certain types of gonococcal infection. While he elaborates a rather formidable method of estimating antisyphilitic compounds in terms of therapeutic units, on the whole his end results and recommended dosages are quite acceptable. He does not think that bismuth and arsenic have a direct spirocheticidal action. He does not recommend bismarsen, and he believes that acetarsone has a much lower therapeutic action than arsphenamine. He is a great believer in the use of the liposoluble bismuth as the bismuth compound of choice in the treatment of syphilis. He thinks that intraspinal therapy for central nervous system syphilis is "obsolete and unsound." He still thinks that there is a place for Zittman's decoction in malignant syphilis. The author believes that myocarditis may be encountered even in early syphilis and completely accepts Warthin's teachings. Moreover, in his opinion pulmonary syphilis is more common than is generally supposed.

It is noted that throughout the book the word "gland" is incorrectly used for lymph node. On page 74, ninth line from bottom of page, the word "trauma" is misprinted. On page 311 the statement is made that "the cord blood should always be taken and a positive result here means syphilis in both mother and child." This is certainly not accepted in all cases in American practice, nor do we believe it to be the case. The reviewer cannot agree to the value of the nostrum Psorimangan in lymphogranuloma venereum, or to satisfactory results in this disease from the use of fuadin.

Burke's treatment of the subject of central nervous system syphilis is particularly satisfactory and would be of profit for any man to read who is interested in this particular subject.

While the author's opinions on various phases of syphilis are perhaps not generally acceptable, at least they are stimulating and provocative of independent thinking. The book is to be recommended to the reader desirous of getting a fresh slant on the subject of syphilis, but some of the six colored plates are rather poor. Many of the photographs are excellent, others poor. The binding is adequate. Moreover, there is a good working index.

A Long Term Study of the Experimental Neuroses in the Sheep and Dog with Nine Case Histories. By O. D. Anderson and Richard Farmer. Published with the Sponsorship of the Committee on Problems of Neurotic Behavior, Division of Anthropology and Psychology, National Research Council, Washington, D. C. Psychosomatic Medicine Monographs Volume II, Nos. III and IV. Paper. Price, \$3.50. Pp. 150, with 36 illustrations. Washington, D. C.: National Research Council, 1941.

In this monograph are presented data and conclusions regarding experimental neuroses in sheep and dogs. The manifestations of neuroses in the animals used, the procedures precipitating them and the therapeutic procedures influencing them are discussed. The discussion is broad and the conclusions are conservative. "In summary, the working hypothesis here advanced is concerned with a circle of connected events. Repeated and prolonged emotions, incident to the experimental procedures, produce a chronic imbalance of the internal secretions which induce a constant state of imbalance of the chemistry of the nerve cells. A change in the irritability of the nervous system results. The nervous system may become hyperirritable. Further and prolonged stimulation of the emotion reinforces and perpetuates the changes in internal chemistry and the vicious circle of events is complete."

A New Test for the Detection of Colorblindness. By P. B. Willberger, B.Sc., M.Sc., M.D., Medical Examiner, Civil Aeronautics Administration, U. S. A. Boards. Price, \$8. Pp. 22, with 19 plates. Columbus, Ohio: Warner P. Simpson Co., 1941.

The author believes that the Ishihara test, now in common use for color blindness, is mainly a test of color "intensity" and cannot be entirely relied on. He presents an objective test consisting of a set of plates made up of nonfading color "chips" of high chroma, high value and accurate hue. The subject need not know the name of a single color. The test is based on the fact that when one gazes at a given color for an appreciable length of time and then shifts the gaze to a blank sheet of white or neutral gray paper the complementary color will appear on the paper as an "after-image" and will be of the same size and shape. The tests can be easily made but will fail in a certain percentage of cases because of lack of concentration on the part of the subject tested. The price of the book seems entirely out of line with the contents.

The Autonomic Nervous System: Anatomy, Physiology and Surgical Application. By James C. White, M.D., Assistant Professor and Tutor in Surgery, Harvard Medical School, Boston, and Reginald H. Snellwick, M.D., Instructor in Surgery, Harvard Medical School. Second edition. Cloth. Price, \$6.75. Pp. 469, with 92 illustrations. New York: Macmillan Company, 1941.

This edition of Dr. White's monograph has been extensively rewritten and expanded. It is a refreshing and gratifying experience to read about the autonomic nervous system as a living, dynamic, functioning apparatus. The subject is so treated largely because the authors are not anatomists or physiologists but clinicians dealing with actual disturbances in living human beings. In this book the reader may find the latest facts and theories in proper perspective. There are excellent discussions of clinical syndromes and surgical procedures. The book is written interestingly; it is well illustrated and excellently documented with carefully chosen references. The book is a necessity for the library of the physician as well as of the specialist.

Hospital Ballads. By Frederick E. Keller, M.D. Cloth. Price, \$1. Pp. 43. Philadelphia: Dorrance & Company, Publishers, 1911.

This is a collection of poems covering everything from the lofty hospital building to the lowly tonsil. Many are on the serious side and thought stimulating; some, however, provoke unexpected and delightful chuckles. Doctors especially should enjoy this book immensely, finding in it parallels to many of their own impressions and experiences.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

SENSITIVITY TO SOAPS

To the Editor—A married woman aged 45 became sensitive six months ago to certain soaps, flakes and chips which she used in the course of her washing about the house. After using these soaps she would have severe attacks of lacrimation, sneezing, profuse rhinorrhea and stuffing of the nose. The attacks last several hours and usually end in two days. Examination shows the nasal mucous membranes and turbinates pale, the air space is practically blocked and the conjunctiva shows similar changes. She can use Life Buoy, Vel and Softwash soaps without acquiring the sensitive symptoms. The soaps that give her the most trouble are Ivory bar soap, Ivory soap flakes, Chipso granules, Chipso flakes, Kirk's Flake White Bar Soap, Rinso granules, Lux, Bubble bath and, most of all, Dreft. Is there any agent present in the soaps which causes the symptoms? Could she be desensitized to the soaps which now irritate her?

T. P. Walsh, M.D., Garrett, Ind.

ANSWER—It is possible that soap is not the primary cause of the nasal symptoms but that it is a secondary factor which acts as an irritant in a nose sensitive specifically to other substances. The reason for suspecting this is that there is no pattern in the history as given to suspect sensitivity to any common ingredient of soaps. The composition of the various soaps mentioned not only varies from soap to soap but may vary materially in different batches of the same brand.

In general, soap is a sodium or potassium salt of any of the higher fatty acids. The fats used vary greatly from time to time depending on their market price and availability. Some of the common fats used are cottonseed oil, coconut oil, corn oil, linseed oil, kapok oil, rapeseed oil, olive oil, palm oil and sunflower oil. In addition, many animal fats are used, a few of which are prime tallow, bone grease, packing house grease and garbage grease. To these oils are added one or more of the following simple chemicals: sodium silicate, sodium metasilicate, trisodium phosphate, disodium phosphate, anhydrous tetrasodium pyrophosphate, sodium hydroxide, potassium hydroxide and sodium carbonate. These are the chemical constituents that go into most soaps.

In addition, various soaps contain perfumes or scenting substances, as creosote, contained in "Life Buoy." It is these scenting agents which are usually the cause of allergy. This does not appear to be the case from this patient's history. She seems to be as sensitive to the unscented soaps as to "Bubble Bath," which is highly scented. On the other hand, she tolerates "Life Buoy," which not infrequently is a cause of symptoms because of its creosote content, and is affected most severely by "Dreft," which is not a soap in the ordinary use of the term but consists of sodium lauryl sulfate and sodium sulfate.

We must conclude, therefore, that there are too many incompatible statements in this history to consider the likelihood of a single component in these various soaps as a cause of the symptoms. The most practical way of dealing with this type of case is to avoid soaps that the patient thinks are the cause of trouble and use only those that are not suspected. There is no successful way of desensitizing to soaps.

TOXICITY OF LUCITONE AND VERNONITE

To the Editor—A patient who is a dental technician works with Lucitone (methyl methacrylate resin, Du Pont) and Vernomite (acrylic resin Monal, Rohm & Haas Company, Philadelphia). These are inflammable compounds and volatile. I understand that cases of dermatitis have occurred with their use, and the manufacturers advise avoiding inhaling an excessive amount. Do you have any information concerning the toxic properties of these chemicals?

A. R. Twiss, M.D., Oakland, Calif.

ANSWER—More is known about Lucitone, the methyl methacrylate, than the Vernomite modification, although both are believed to be esters of acrylic acid. Using Rohm and Haas's methacrylate products, Deichmann (Toxicity of Methyl, Ethyl and *n*-Butyl Methacrylate, *J. Indust. Hyg. & Toxicol.* 23:343 [Sept. 1941]) has presented well defined experimental data on a series of these compounds. Through oral administrations, cutaneous applications, subcutaneous injections and vapor inhalation these materials were tested leading to evidences of pathologic effects. The low volatility of some methacrylates are unfavorable to the duplication of some results under actual industrial conditions. High concentrations led to accelerated

respirations, motor weakness, dyspnea, diminished reflexes, increased defecation and urination. In such animals as died, death occurred in coma as a result of respiratory failure. In case the introduction of these methacrylates was by the inhalation route, local irritation of the mucous membranes occurred, in addition to the aforementioned features. Cutaneous application produced local but temporary irritation, and the possibility is that cutaneous absorption may take place. The urine of certain animals showed hemoglobin. In some animals the blood porphyrin is high. The respiratory tract is, however, the site of the severest pathologic changes. From oral administration, corrosion of the wall of the stomach followed. Nineteen mg. of methyl methacrylate per liter of air killed all animals within five hours. Subcutaneous introduction, although leading to fatal poisoning, required larger quantities than in the case of oral administration. The inference is that methacrylates may be regarded as toxic agents at least under some circumstances. The possibility exists that the prolonged absorption of small quantities may lead to the production of porphyrins which through photo action may lead to dermatitis or other physiologic abnormalities. More extensive information may be found in Frederick, D. S. *Acrylic Resins, Modern Plastics* 16:16, 1938.

POSSIBLE URTICARIA FROM SOLVENT

To the Editor—A patient has a generalized urticaria involving almost the whole body surface except the face and hands. It began on the feet and spread over the rest of the body in about three hours. The patient is a dry cleaner and for the past two years has been working with Skellysol T (flash point 140 F.) as the dry cleaning solvent. To this is added powdered asbestos as an adsorptive agent. Once a week caustic soda is added to the system to recondition the solvent and clean the filters. Is there anything in this process that could be the cause of the urticaria? It came on about twenty-four hours after the caustic soda wash was used. Have any reports on the toxicity of Skellysol T been made to date?

John B. Dressler, M.D., Ida Grove, Iowa

ANSWER—This type of solvent is preponderantly a petroleum derivative on the order of naphtha. Such materials are known to produce dermatitis, "naphtha jags" and rarely chronic systemic naphtha poisoning. Generalized urticaria is unusual but possible. The beginning point of the urticaria on the feet rather than some exposed portion of the body does not suggest a result from direct contact. The work of any dry cleaner is likely to provide exposures to a wide variety of pollens and other dusts on garments prior to cleaning. If there is any connection between work exposure and the urticaria, the last mentioned factor may be of greater significance than the solvent materials. However, to rule out the latter, contact tests should be made with the several ingredients mentioned, as well as the mixture as a whole. Since the straight naphtha and the sodium hydroxide obviously will produce direct irritation, any test made should utilize high dilutions, such as with acetone in the case of naphtha and the mixture, while for sodium hydroxide aqueous dilutions may be made. The absence of reaction to any of these substances should lead to investigation of other causes.

LADDER WIRE SPLINTS

To the Editor—Can you give me a description of the "ladder wire splints" used by the Army? F. L. R. Roberts, M.D., Spirit Lake, Iowa

ANSWER—The term ladder wire splints used in the Army refers to the so called Cramer wire material used as a splint. It is described in a government pamphlet (Medical Field Manual Splints, Appliances and Bandages, prepared under the direction of the Surgeon General, Field Manual 8-50, United States War Department, 1940). The frame is made in the form of three sides of a rectangle $3\frac{1}{2}$ by 31 inches, with one short side missing, made of number 9 B and S gage malleable iron wire. The crosspieces are made of one continuous piece of number 15 B and S gage malleable iron wire shaped in the form of a gridiron with parallel bars about $\frac{1}{8}$ inch apart. The gridiron section of wire is attached to the frame by tightly wrapping with a malleable iron wire of about number 22 B and S gage, three turns to each lateral section and two in between being made. Ends are well wrapped and secured. After assembly the splint is heavily galvanized.

It is used (1) in splinting for transportation of Pott's fractures, injuries, and fractures about the ankle and foot, in peace time gauze and cotton pads and in war a large first aid packet being used as padding, the splints, when padded and applied, are held in position by a bias muslin bandage (2) as a transportation splint in the field or in the hospital, or (3) when a malleable light splint is required for a temporary period for the shoulder, elbow or wrist to maintain a fixed position other than that of extension.

SURGICAL CORRECTION OF CONGENITAL
MALFORMATIONS

To the Editor:—1. A child now 2 months old was born with extensive malformations. There are bilateral complete cleft palate and harelip, bilateral club foot, webbing of the fingers of the left hand and absence of one of the joints of the ring finger of the right hand. Despite these severe handicaps the child has grown and is now a strong, lusty baby. Could you give the generally accepted opinion as to the best time for surgical correction of the abnormalities? J. Stuart Staley, M.D., Morion, Va.

To the Editor:—2. A patient 5 months old has webbing of the second and third fingers on each hand. One hand, the left, permits of free movement and pulling of the connecting skin, the anterior and posterior layers of the skin presenting no interposing tissue. On the right hand the interconnection is much less movable and presents a thicker layer between the two dermal layers; the fingers are inseparable by manipulation, although there seems to be no intimate connection between the deeper structures of the fingers themselves. Would you advise, generally, to operate now or to wait until the child is older? If the latter, at approximately what age would the functional result be most promising? Where can I find literature which goes into the subject in detail?

William H. Mohsperger, M.D., Buffalo.

ANSWER.—1. The repair on the lip should be started within the first six weeks if the child is in good condition; otherwise, as soon as the general condition can be built up. The club feet can be manipulated and put in plaster at the same time. The repair of the palate should be postponed until the child is at least 18 months old. Unless there is complete fusion of the fingers including the terminal phalanges it has been found advisable to delay operative work until the child is about 6 years old. If the terminal phalanges of fingers, of unequal length, are fused, they should be separated past the distal joint as early as the first year in order to allow individual growth. The complete operation should be done at about the age of 6 years.

2. Experience has shown that it is advisable to delay operative work in cases of congenital syndactylism until the patient is about 6 years old. However, should two fingers of unequal length be completely fused, including the terminal phalanges, then they should be separated past the distal joint when the child is about 1 year old in order to allow free growth of both fingers.

Reference:

Davis, John Staige, and German, William J.: Syndactylism (Coherence of the Fingers or Toes), *Arch. Surg.* 21: 32-75 (July) 1930.

POSTOPERATIVE SHOCK OR "LIVER DEATH"

To the Editor:—A well developed man aged 54 and slightly overweight had a gastric resection. It was necessary to give the following anesthetics to get adequate relaxation: (1) pentothal sodium 1.5 Gm., (2) ethylene and ether vapor and (3) ether given by the drop method. The operation lasted three hours. After the operation the patient complained of extreme pain and had considerable oozing of blood into the stomach. He showed signs of circulatory collapse, the temperature rising the second postoperative day to 107 F. and the pulse rate increasing from 64 to 104. This history is brief, but I wonder if it fits in with "liver death"?

Mary J. Erickson, M.D., Thomasville, Ga.

ANSWER.—The description of the patient's postoperative course would lead one to suspect that the cause of death was shock associated with secondary hemorrhage. This probably was due to a prolonged, difficult operation.

The etiologic factors concerned in so-called liver death are poorly defined. For the most part, in reported cases liver death has followed operation on the biliary tract, usually cholecystectomy, and there has been some evidence that it is due to disturbances of the blood supply to the liver. The same result can follow thrombosis of the portal vein. If the portal vein or the hepatic artery was disturbed during the course of the gastric resection, the resulting disturbance to the liver and to hepatic function added to the shock of the surgical procedure might have been a factor in the rise in temperature to 107 F.

DERMATITIS DUE TO SHAVING

To the Editor:—What is the prophylaxis and treatment of the dermatitis following shaving, especially in the neck? Is there some specific way of preventing the shaved hairs from growing into the epidermis and causing a rash? What shaving apparatus would you advise?

M.D., Canada.

ANSWER.—The proper prophylaxis of the dermatitis that frequently occurs after shaving is to avoid close shaving and to use an antiseptic lotion or a suitable cream. To prevent the shaved hairs from growing into the epidermis, the patient should be advised to shave along the line of growth of the hair of the beard instead of against it. The use of one of the standard electric razors may prevent the occurrence of this condition.

SNELLEN'S TEST FOR VISION

To the Editor:—For the calculation of loss of central visual acuity I have been using for near vision the A. M. A. reading card (Snellen's test type for near vision). Same company physicians use the Jaeger method of testing for near vision. To facilitate computation, please let me know the equivalent of each Jaeger type in terms of Snellen's test type for near vision.

Jose S. Santillon, M.D., Manila, P.I.

ANSWER.—The Jaeger series for testing near vision was never standardized, and various editions show considerable divergence in the size, shape and character of fonts used. It is impossible to present reading matter in lower case that precisely conforms to the mathematical requirements of optics. The reduced optotype is the only scientifically accurate means by which the acuity of near vision can be ascertain. Consequently short words composed of optotype block letters are used in the A. M. A. reading card for rating visual efficiency at the near point (14 inches, or 35 cm.). The Jaeger numbers roughly correspond to the following:

Jaeger Number	Point Type	A. M. A. Card (14/—)	Distance Equivalent	Percentage Visual Efficiency
1	3	14	1.0; 20/20	100.0
2	4	17	0.8; 20/25	95.0
3	5-6	23-28	0.6-0.5; 20/30-20/40	91.4-83.6
4	7	31	0.44; 20/45	79.3
5	7½	33	0.42; 20/47	78.0
6	8	35	0.4; 20/50	76.5
7	9-10	47-50	0.3-0.28; 20/65-20/70	66.6-67.8
8	11-12	52-56	0.27-0.25; 20/71-20/80	62.2-58.5
10	13	61	0.23; 20/87	54.9
12	14-16	67-70	0.22-0.20; 20/90-20/100	53.4-48.0
14	18-24	95-117	0.15-0.12; 20/180-20/170	37.5-25.0

MASSAGE AND OSTEOARTHRITIS

To the Editor:—A patient says that she was told at an out of town clinic that she should not permit any one to massage her knees for hypertrophic arthritis. Is this an accepted idea, and if so why? I ordered gentle massage after diathermy.

M.D., Clinton, Iowa.

ANSWER.—Diathermy followed by gentle massage is a common form of treatment for osteoarthritis (hypertrophic arthritis) of the knee. It is a principle in the application of massage in the treatment of arthritis that it should never add by trauma to the inflammatory or otherwise diseased process already present. It follows from this that massage for the most part should be given in the neighborhood of but not immediately over the site of the arthritis. There are some exceptions to this statement in that gentle stroking massage may sometimes be profitably applied over a diseased joint.

DERMATITIS FROM EYEBROW PENCIL OR NAIL POLISH

To the Editor:—A patient aged 48 has a eczema about the eyelids and the forehead which I believe is due to the use of an eyebrow pencil. She is otherwise in good health. Physical examination and all laboratory examinations give normal results. Do you know what is in eyebrow pencils which might cause eczema? Do you know of any such material that will not cause an allergic reaction?

M.D., Minnesota.

ANSWER.—The composition of the average eyebrow pencil is lamp black, paraffin, liquid petrolatum or petrolatum. This is a simple and for the most part harmless cosmetic. In all probability the eczema about the eyelids and the forehead is due to nail polish. Many cases of this sort have been reported in the literature in the past few months. This source of irritation should be investigated.

USE OF ESTROGENS FOR DIABETIC PATIENTS

To the Editor:—Would you kindly give me some information regarding the use of estrogenic hormones in the amenorrheas of the diabetic patient and what the effect is on the course of the diabetes.

Edna F. Patterson, M.D., Tokomo Park, Md.

ANSWER.—Estrogen, thyroid or combined estrogen and progesterone therapy may be used for the diabetic as for the non-diabetic and will have neither a beneficial nor a harmful effect on the course of the diabetes.

QUEEN ELIZABETH'S CONTRIBUTION TO MEDICINE

To the Editor:—The Examining Board for Nursing Registration in this state recently included among its examination questions, "What did Queen Elizabeth do for medicine?" I am unable to find any answer to this question. Can you supply the information?

R. A. Kilduffe, M.D., Atlantic City, N. J.

ANSWER.—In 1565 Queen Elizabeth issued a statute permitting the dissection of executed criminals.

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ACUTE ABSCESS OF THE THROAT IN CHILDHOOD

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CHICAGO
AND

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LOS ANGELES

This report deals with 250 cases of true and potential, or abortive, abscesses in the throats of children under 14 years of age observed in the wards of the Children's Memorial Hospital, Chicago, over a period of ten years ended Dec. 31, 1940. In 181 of these cases there was frank suppuration, as shown by spontaneous rupture or surgical drainage. In the remaining 69 a localized inflammatory lesion, apparently differing in no way from the lesions in the early stages of the other group, subsided without evident pus formation for one reason or another. Nearly all of these cases were treated in the pediatric service exclusively except when laryngologic help seemed indicated as in any analogous situation. This rather unusual procedure requires some justification, at least an explanation.

At the Children's Memorial Hospital, except for one resident in pathology, all the house staff are future pediatricians or general practitioners and all of these rotate through the special as well as the pediatric services. In other words, there was no resident in laryngology to train for the practice of his specialty. Since the pediatrician and the general practitioner are obviously in the only strategic position to see the early stages of abscess formation, it is logically important that they should have adequate training in that direction. They have, moreover, from the nature of their experience a wider knowledge of clinical setting in general and of specific differentiation from other conditions with which an abscess might be confused than has the laryngologist who comes into the picture at, or near, the finish. To the experienced pediatrician this becomes evident as he scans the reports in the literature on this subject, nearly all of which come from laryngologists.

The pediatrician is a general practitioner who limits his practice to a certain age group, and it naturally follows that it may be difficult in a borderline situation to determine, to the satisfaction of all concerned, whether a given relatively minor case is logically and safely pediatric or, indeed, safely surgical. We feel that the simple abscess which constitutes the vast majority can safely be left in pediatric hands, while the more serious lesion, or complication, calls for the help of the laryngologist. Furthermore, except in case of hemorrhage from erosion of a prominent artery or of invasion of the mediastinum, both rare in childhood, or of those even rarer cases reported in the literature, which we

have never encountered, in which a mere examination leads to sudden death, a fatality is nearly always due, not to the abscess itself, but to pulmonary, septic and other conditions in which the pediatrician is on more familiar ground than is the laryngologist. In all serious cases team work, at least, is indicated. The local lesion always has a child attached to it, and the child is often far more important than the local lesion. Finally, when Richards¹ in his authoritative paper on retropharyngeal abscess, after emphasizing the importance of a correct diagnosis and pointing out that 29 of his 162 cases were diagnosed incorrectly, comments "Mention of these errors is not in any way intended to cast aspersions on . . . en of the examining physician, but simply to call attention to the various deceptive signs and symptoms which this one single condition can present," one would seem justified, in the same kindly spirit, in considering this as further evidence of the need for more adequate training along these lines of the future pediatrician and general practitioner, who will eventually be called on, in nearly every instance, to stand in the first line of defense against such error in diagnosis. This view finds further confirmation in the following quotation from the same source: "Greenwald and Messaloff state that in their experience retropharyngeal abscess escapes recognition more frequently than any other acute disease in childhood. None of their cases came to them with this diagnosis but had been treated for from one to three weeks with no suspicion of the correct diagnosis. It is only fair, however, to state that the majority of these cases had not been seen by a laryngologist, who naturally would be more likely to detect the presence of an abscess." Because of the emphasis which we have always placed on the recognition of these abscesses, the errors in diagnosis on the part of our pediatric resident and outpatient staff were practically negligible.

Our purpose, then, is to present our observations from a pediatric point of view, in a simple clinical way, without anatomic or pathogenic detail, in the hope that they may be of interest and service to the pediatrician and general practitioner, and possibly to the laryngologist because of the method of approach.

From a purely clinical point of view we recognize three main types of acute abscess of the throat in childhood: retropharyngeal, retrotonsillar and peritonsillar, or quinsy. Parapharyngeal abscess will be considered as a complication, an extension, of one of these abscesses into the parapharyngeal space, or pharyngomaxillary fossa. Retropharyngeal abscess due to caries of the cervical spine does not belong in a discussion of acute abscess of the throat. No such abscess, moreover, occurred during the period covered by this series. While the differentiation between the different types of abscess

1. Richards, Lyman: Retropharyngeal Abscess, *New England J. Med.* 215:1120-1130 (Dec. 10) 1936.

is usually easily made, we have not always found it to be so especially in infancy. We have been compelled to record 8 as "uncertain" and we are not sure that our interpretation of the others is correct in every instance. We do feel sure that it is sufficiently accurate to make our statistical summaries as informative as if a few possible misinterpretations had not occurred. Because of our special interest in the subject, in the case of one of us extending over several decades, our own diagnostic and progress notes, as well as those of the house staff and the attending pediatricians and laryngologists, were more than usually full and adequate for our present purpose.

We have been impressed by the fairly constant chronological setting of the different types of abscess. Thus, the retropharyngeal abscess was almost restricted to the first two years of life; the retrotonsillar abscess came into prominence in the third and fourth years and tapered off after the seventh or eighth year; one peritonsillar abscess occurred in a child of 5 years, the rest from the seventh year on.

All of these acute abscesses have four cardinal signs or symptoms that vary in degree but are rarely absent:

1. An infection in the throat, preceding or concurrent.
2. Pain on swallowing. Children rarely complain much with an uncomplicated throat infection. If pain on swallowing, even to some extent without swallowing, supervenes on such an infection an abscess must be suspected. The pain is usually distressing, varying in degree with different types of abscess and naturally leads to a disinclination, even a refusal, to eat. It is promptly relieved if the abscess breaks or is drained surgically.
3. Localized swelling in the throat, the site depending on the type of abscess. This may or may not be visible; it can always be made out by palpation.
4. Unilateral, or predominantly unilateral, cervical adenitis on the affected side. Throat infections are commonly accompanied by pain, tenderness and swelling of the corresponding cervical lymph nodes, often to a pronounced degree. The adenitis tends, however, to be about equal on the two sides. A definite unilateral predominance, usually quite obvious to the eye, should always lead to suspicion of an abscess in the throat on the same side. Bilateral involvement of the cervical glands should occur with simultaneous bilateral abscesses in the throat, but this practically never occurs in childhood.

Other signs and symptoms of warning significance, such as noisy breathing with snoring and choking sounds; nasal, or mushy sound of the voice and cry; laryngeal obstruction with dyspnea, stertorous breathing and some cyanosis; regurgitation of fluids through the mouth and nose on swallowing; prominence of one tonsil or one side of the throat; deviation of the uvula away from an affected side, may occur to a varying extent with one or the other type of abscess. Their occurrence in the different types will be discussed under the appropriate headings. No significant relationship could be made out between the degree of fever and the severity of the illness, and no helpful prognostic information was obtained from blood counts. The fever ranged from near normal to 106 F. and the leukocyte count from normal to 82,000. In general both fever and leukocyte count ranged higher in the children with retropharyngeal abscess than in the others.

RETROPHARYNGEAL ABSCESS

A retropharyngeal abscess is a suppurative involvement, secondary to an infection in the throat, of one or more of three to five paired lymph glands that lie parallel to one another on each side of the posterior pharyngeal wall in the potential space between the pre-

vertebral fascia and the posterior pharyngeal mucosa. These are said to atrophy after the third or fourth year, although "one or two remain on each side" (Lederle). It is generally assumed that this accounts for the fact that this kind of abscess is so rare after the period of infancy. If an upper gland is involved, or if there is an extensive abscess, this can usually be seen in the posterolateral angle of the pharynx. If the lower glands are involved they cannot usually be seen with ordinary pediatric technic; the palpating finger can, however, easily locate the swelling and can at the same time determine if fluctuation has occurred, and if so, to what extent. With such a low abscess there is now, in addition to the four cardinal symptoms, noisy, snoring, choking respiration, sometimes together with dyspnea and stertorous breathing as the larynx is impinged on. Cyanosis may occur but is rarely serious. The voice and cry are nasal and muffled in quality. Regurgitation through both nose and mouth may occur if the baby bravely attempts through hunger and thirst to overcome the handicap of painful swallowing. The tonsil is not pushed forward and there is no gross distortion of the throat as in the other types of abscess.

As in lymphadenitis elsewhere, suppuration may or may not occur. We did not, of course, attempt to determine the presence or absence of such involvement unless there were definite retropharyngeal symptoms. Of 105 cases of known retropharyngeal adenitis in our series, 23 subsided without apparent suppuration either spontaneously or following the administration of sulfanilamide; in 82 there was frank suppuration. Only the latter will be used for statistical purposes, as also in the other types of abscess. There was, however, no significant difference in the incidence as to the age of the child in the suppurative and nonsuppurative cases. Nearly 90 per cent of our 82 cases of retropharyngeal abscess occurred in the first two years of life, nearly 98 per cent in the first three years. Three of the infants were only 3 months old; one child was 3 years old and another 5 years of age.

RETROTONSILLAR ABSCESS

By retrotonsillar abscess we mean an abscess directly behind the tonsil in the lateral pharyngeal wall. In the literature this is sometimes included under "peritonsillar" abscess. The swelling may or may not be visible on simple oral examination, but it is readily made out by palpation. The latter too is the surest method of determining whether suppuration has occurred and to what degree. In addition to the four cardinal symptoms and signs there is another that is equally constant: the affected side of the throat is not only more prominent, an asymmetry that is nearly always significant; the tonsil is pushed forward and mesially so that more of it is visible than of its mate. This is in striking contrast to quinsy, in which the swelling is mesial to and in front of the tonsil, so that the latter is pushed back and out of sight or nearly so. Children with retrotonsillar abscess are usually not as sick as are the infants with retropharyngeal abscess and much less so than older children with quinsy.

It has seemed to us that this type of abscess deserves more attention than has been given to it. In our series there were 79 cases with suppuration and 38 in which there was prominent localized swelling which subsided without drainage, either spontaneously or following treatment with sulfanilamide. There were thus only a few less than of the retropharyngeal type. We feel confident, however, that our interpretations were correct

except possibly in a few instances in late infancy. Only 2 occurred before the end of the second year of life. They were most numerous in the third and fourth years, about one half of the total number occurring during this period. After this they were fairly equally distributed up to and including the eighth year, after which they rapidly dropped to 4 in the ninth year, 3 in the tenth and 1 each in the eleventh and twelfth.

PERITONSILLAR ABSCESS

There were 11 cases of peritonsillar abscess, or quinsy, and 8 cases in which an initial swelling subsided either spontaneously or following the use of sulfanilamide. The youngest child with an abscess was 5 years old; the others were 7, 8, 9, 10 and 11 years of age, each year represented by two abscesses. This adds further support to the well known fact that quinsy is a rarity before the sixth or seventh year and that the incidence is low all during childhood as compared with that of other abscesses or with later life. In addition to the symptoms and signs common to all abscesses there is the obvious swelling, or bulging, mesial to and in front of the tonsil, causing the latter to recede and the uvula to deviate to the opposite side. A striking and characteristic sign, absent in all other kinds of abscesses of the throat, is the inability to open the mouth to more than a very limited extent, owing both to trismus from local conditions in the throat and to extreme pain when it is attempted. The rather prolonged course of the disease, the constant pain, the extreme dysphagia, the high fever, the loss of sleep, all lead to a severe degree of prostration and loss in weight.

PARAPHARYNGEAL ABSCESS

Only one parapharyngeal abscess was encountered. This will be discussed later.

EFFECT OF TONSILLECTOMY

In only 11 instances were abscesses found in children on whom a tonsil and adenoid operation had been done. Seven of these were retrotonsillar, 2 were peritonsillar and 2 were "uncertain."

DIAGNOSIS

The diagnosis of an abscess in the throat should rarely be missed if the condition is constantly in mind in the presence of any of the signs and symptoms that are so characteristic. Differentiation between the various types of abscess is sometimes difficult, especially in infancy and early childhood or if spontaneous rupture has occurred. In the great majority of cases it is not. In this series we were "uncertain" eight times for one reason or another. In addition to what has been said, two things may well be stressed: the diagnostic importance of palpation and the ominous warning significance of hemorrhage.

While certain abscesses can be seen, the palpating finger is always more revealing as to the location and, even more important, as to the stage of development. It is a simple procedure. It requires however a special technic, of which speed is an important factor. We have fortunately had none of those experiences which have been recorded, such as alarming symptoms, apnea and even death from the mere insertion of the finger or a tongue blade, although repeated examinations are usually indicated in order to note progress, and many more are made in a hospital for pedagogic reasons. Except for the toothless baby, some form of mouth gag is indicated if the finger is bare, and the pediatrician can feel more with a bare finger than with one that is

covered by a rubber glove. A convenient and efficient mouth gag consists of two medium width tongue blades inserted on edge between the upper and lower maxillas in the region of the molars. This is more easily and readily removable and to us seems safer than the commonly used more cumbersome mouth gag. In examining for retropharyngeal abscess the moistened finger is rapidly passed over the tongue and down the pharynx. This method is probably the safer one but has the disadvantage of having the ungual surface of the finger next to the abscess. In larger infants the finger can safely be passed from above if too great force is avoided. This brings the palpating surface more naturally against the site of the abscess in the posterolateral angle of the pharynx. The examination must be made quickly without force, and care must be taken, if the finger is bare, that it is withdrawn before the tongue blades are removed. A bite in the presence of an infection in the throat is not without danger, as one of us can testify from personal experience. If there is a severe adenitis or an abscess, the normally concave posterolateral angle of the pharynx is obliterated on the affected side by a rounded protruding swelling. If fluctuation is present, it can readily be made out and also the degree to which it has advanced.

In palpating a retrotonsillar or a peritonsillar abscess, much the same technic is applied except that the finger is best inserted at the angle of the mouth on the affected side.

Frank bleeding supervening on an abscess in the throat must always lead to the suspicion of a parapharyngeal abscess with erosion of a large blood vessel, usually the common or internal carotid, although the vertebral artery may be the source of the hemorrhage, as in a case reported by Richards. Repeated pharyngeal hemorrhage practically establishes the diagnosis and makes the indication for surgical intervention imperative. There was only 1 case in our series, that of a boy of 7 years who died of a sudden massive hemorrhage.

PROGNOSIS

The outlook in throat abscesses in children is generally favorable, although there is a potential danger that must always be kept in mind. Death is rarely due to the abscess itself; more often it follows from an infection of which the abscess is a complication, not a cause. This is confirmed in our series. There were three deaths. Only one of these, the parapharyngeal abscess, was unquestionably due to the abscess itself. The other two followed retropharyngeal abscesses. One occurred in an infant of 7 months with "a low abscess encroaching on the larynx." The abscess was opened by one of the laryngologists, who reported obtaining about 2 drachms (8 cc.) of pus. Five days later he noted "Pharyngeal swelling practically all gone. Breathes normally." Two days later there was definite pneumonia, followed by a severe diarrhea, to which the infant succumbed twelve days after the abscess was opened. The necropsy report stated "Mucosa of pharynx intact. Small area of infection at site of abscess drainage. Mediastinum normal." This baby, moreover, had an eczema, a well known risk in any respiratory infection.

The second death following a retropharyngeal abscess was in an infant of 11 months with an extensive bronchopneumonia and an admission temperature of 106 F. There was so much obstruction to breathing that a tracheotomy was considered. There was "moderate

opisthotonos and a spinal fluid cell count of 66." A small abscess was opened by the laryngologic service. Two days later the following notation was made: "Retropharyngeal swelling has disappeared. Breathing is much easier." The temperature remained around 105 F. and the child was kept in an oxygen tent. Death occurred on the following day, obviously from an overshadowing bronchopneumonia. Although death could hardly be attributed to the abscess itself in either of these 2 infants they will be included in a statistical summary, as is usually done, because they died after a retropharyngeal abscess.

The total mortality of all patients with abscesses was 1.7 per cent; of those with retropharyngeal abscesses, 2.4 per cent. Statistics of mortality from any one source may be seriously misleading. The element of luck may easily play a major part. Thus, Richards reports a mortality of 7.4 per cent in 162 cases of retropharyngeal abscess. Luck was not with him, since of his twelve deaths two were due to hemorrhage, one from a carotid and one from a vertebral artery; one to an insertion of a tongue blade; one to a preliminary laryngoscopy, one to a mediastinitis; one occurred three hours after a spontaneous rupture and in four there was a generalized septicemia. He¹ reports the mortality following retropharyngeal abscess in the hands of others as follows: Frank in 1921, 6.7 per cent in a series of 74 cases; Babbitt in 1924, 10 per cent in 50 cases; Guthrie in 1926, 15 per cent in 20 cases; Greenwald and Messeloff in 1929, 7.3 per cent in 55 cases; Bokai 4.4 per cent in 317 cases; Wishart in a series of 41 cases had only one death and that in a moribund patient, a preoperative fatality. From all this it is evident that an abscess in the throat of a child must not be taken lightly and also that luck seems to have been with us in our series.

TREATMENT

The general treatment is much the same as that of any serious infection of the upper respiratory tract and need not concern us in this connection.

We feel very strongly that in the local treatment of any abscess of the throat, other things being equal, we should wait before establishing drainage until there is not only fluctuation but advanced fluctuation, or pointing. Healing occurs more promptly and more surely if the abscess has fully matured; there is probably less danger of systemic invasion, and the necessity of repeating the operation is reduced to a minimum. This attitude explains, at least in part, the high incidence of spontaneous rupture, which, even to us, is a bit surprising in retrospect. Except in the case of the child with a parapharyngeal abscess there was, however, no serious complication following spontaneous rupture, and in this instance the abscess had broken long before the child came under our observation. Frankly, however, we were often a little chagrined, but not worried, when this occurred, as we naturally believe that an abscess should be opened when it is ripe both for the child's sake and for the training it affords. This does not apply to retrotonsillar abscess as fully as it does to the other types, as will appear later. Of eighty-two retropharyngeal abscesses thirty, of seventy-eight retrotonsillar abscesses sixty, and of eleven peritonsillar abscesses six drained spontaneously.

When abscesses were opened surgically this was done routinely by the assistant resident in the service at the time. The forceps was used in every instance except in a few cases treated by the laryngologists with the

scalpel. In the case of three retropharyngeal and one retrotonsillar abscesses, either for class demonstration or because of an ominous outlook, one of us (J. B.) assumed the responsibility. Five retropharyngeal and five retrotonsillar abscesses were opened by the laryngologists, in three instances with forceps and in seven with a scalpel. The five peritonsillar abscesses that were drained surgically were all done by the laryngologists with a knife. Anesthesia was not employed for several reasons: because it constitutes a hazard from local conditions in the throat, because there is commonly a concurrent respiratory tract infection, because of the danger of aspirating pus while the cough reflex is abolished or obtunded and, finally, because of the effect on the child of an anesthesia as compared with that of the momentary, relatively slight pain that goes with opening a ripe abscess through a thin walled, pathologic mucosa.

The retropharyngeal abscesses were treated with the child in the erect position. Snugly wrapped in a sheet he was seated with the legs free on the lap of one assistant, while another held the head and inserted two medium width tongue blades on edge, as a gag, between the upper and lower maxillas. Even more here than in the mere digital examinations we feel that there is less danger from the use of tongue blades than from the usually employed, more cumbersome, mouth gag, because they are so much more quickly removable, especially in an emergency. Facing the child, the operator inserts a moistened index finger over the root of the tongue, locates the point of maximum fluctuation and with the finger still in the throat quickly inserts a fairly sharp pointed forceps into the abscess and opens it slightly. The baby is immediately tipped forward and held in a horizontal position for a time so as to avoid aspiration of the first gush of pus. He is then kept in bed on his stomach or on one side for some hours. In only a few instances was it necessary to repeat the procedure, usually because it was done too early or the opening was too small. The subsequent course can readily be evaluated by the degree of relief of all symptoms and if necessary by digital exploration.

The whole procedure, from the time the tongue blades are inserted to the time when the infant is tipped forward need not, and should not, take more than five seconds, certainly not more than ten. This in itself has an appeal as compared with the more time consuming exaggerated prone, or Rose, position, apparently increasingly advocated by laryngologists. In this position, with the head extended backward the abscess is opened under direct vision with a knife, often followed by a forceps to widen the opening and by suction to minimize the danger of aspiration of pus. The pediatrician at least can see better with the end of his finger than he can with a laryngoscope and he doesn't trust himself with a knife in the throat of a struggling baby. There is, of course, no evidence available that either method carries a lesser mortality or morbidity than does the other. We feel too that if the child had a choice he would much prefer to face the ordeal in the erect rather than in the unnaturally constrained prone position, and, after all, the effect on the mind even of an infant must be weighed in the balance. The first gush of pus when the abscess is opened in the erect position adequately empties the cavity, and any danger of aspirating pus later has seemed negligible and would, after all, be about the same in the two methods of procedure. We are also inclined to think that the ragged

opening made with the forceps is less apt to close prematurely than is the cleancut opening made by a knife, thus calling for less frequent need for reoperation.

Approximately 76 per cent of the retrotonsillar abscesses ruptured spontaneously. This was not accidental; we allowed most of them to do so. They come to a head rather rapidly as a rule, have a thin walled covering and commonly rupture within a few days. There is usually not a very large amount of pus, and the children are only exceptionally as sick or in as much discomfort as are those with the other types of abscess. In older children, and nearly all of the retrotonsillar abscesses occurred well beyond the second year of life, there is a certain amount of psychic trauma that can be avoided if the abscess is allowed to follow its own course. We have had no occasion to regret pursuing this method of procedure. Only when things did not progress favorably, when the course was unduly prolonged or there was marked dysphagia or discomfort did we intervene surgically, nearly always with the forceps and in much the same manner as detailed under the treatment of retropharyngeal abscess.

To what extent nature will sometimes take care of things along devious routes was illustrated in the case of a child of 5½ years with an abscess back of the left tonsil. Mere pressure on the ripe abscess by an examining finger caused a copious discharge of pus to shoot for some distance from the left ear. On cleaning the ear canal and again making pressure on the abscess, one could see pus welling through an opening in the anterosuperior wall of the external auditory canal. Recovery followed without further treatment. There was no discharge into the throat at any time. This may have been poor surgery, but it does convey a lesson.

The course of a retrotonsillar abscess, both advancing and receding, can readily be followed by noting the degree of subjective symptoms, by the position of the tonsil and if necessary by palpation. Relief is often spectacular. An older child who can hardly be induced to swallow any supper will often eat a hearty breakfast if the abscess has broken over night.

True peritonsillar abscess, or quinsy, we were glad to turn over to the laryngologists, always with the hope that they would not operate too early or that it would rupture spontaneously. The old saying that if no pus was obtained there was "a relief from congestion" has, fortunately, pretty much gone into the limbo of discarded therapeutic attitudes. The characteristic inability of the child to open his mouth to a pediatrically workable degree and the uncertainty of hitting the abscess and nothing else, call for the special skill of the laryngologist. While it is desirable, per se, to await obvious pointing of the abscess, the distress and prostration are so great that intervention is often indicated as soon as definite fluctuation, or the spot at which pointing will occur, can be made out. That many of them, under favorable circumstances, will rupture spontaneously and safely is shown by the fact that more than half of those in this series did do so, i. e. 6 of 11 cases.

The course and treatment of the one parapharyngeal abscess that occurred in our series point, once again, to the fact that the rare lesion, as this is in childhood, is apt to be misinterpreted, or temporized with, especially when the only relief can come from a mutilating operation with potentially serious sequelae. The ominous, warning significance of a hemorrhage from

an abscess of the throat, especially if repeated, can well be emphasized again. This boy of 7 years had had a sore throat for two weeks, high fever, predominantly unilateral cervical adenitis, pronounced dysphagia, some spitting of blood for two days and a petechial eruption on his legs and torso obviously due to sepsis. When seen by one of us in the outpatient department, cautious inspection showed an intense redness and a swelling and edema that nearly obliterated all landmarks. There was some bleeding. A digital examination was unfortunately made by one of the house staff with a resulting fairly large and rather prolonged hemorrhage, which subsided after a time. There was an unfortunate delay in resorting to surgery, not due to the laryngologic service. Nine hours after admission he was taken to the operating room for ligation of the common carotid artery. The pharynx was now filled with fresh and clotted blood. With the beginning of anesthesia a sudden profuse hemorrhage occurred and death came promptly before ligation could be undertaken. In retrospect it is obvious that the procedure should have been instituted at once, although the result would probably have been the same in the presence of an advanced sepsis. At necropsy there was found "a large perforation of the posterolateral pharyngeal wall below the level of the tonsil" and "a large erosion of the internal carotid artery." The parapharyngeal space was "filled with a large clot that could be lifted out of the abscess cavity. Cultures from the abscess and from the blood stream yielded a hemolytic streptococcus."

SULFANILAMIDE

It was during the period covered by this series that sulfanilamide came into use. It was the only drug employed, because in the earlier years it was the only one of the sulfonamides current and also because we thought that a hemolytic streptococcus was probably the active agent. The drug was administered to 15 children with retropharyngeal, 10 with retrotonsillar and 3 with peritonsillar localized inflammatory lesions that seemed likely to go on to suppuration. Of these, 7 retropharyngeal, 5 retrotonsillar and 2 peritonsillar lesions did not suppurate. These figures give an incidence of subsidence without abscess formation approximately twice that of the whole series. No deductions are, of course, justifiable from so small a number and in a condition so variable and uncertain. It is, however, our general impression that an abscess may be forestalled if sulfanilamide, or one of the later drugs, is given early enough and in adequate dosage. The limitations of what constitutes "early enough" are obvious and remain to be determined from future experience. We feel that, in the light of our present knowledge, one of these drugs is clearly indicated if suppuration does not seem to have taken place.

The evidence that these drugs have only an inhibitory action and should not be given if suppuration has occurred is more convincing than the evidence that they should be given in the earlier stages. We have seen an abscess inhibited twice only to recur later when the drug was stopped, unhappily prolonging the illness and the discomfort. Eight infants with retropharyngeal abscesses were given sulfanilamide. Five of the abscesses ruptured spontaneously while the drug was being given, one was inhibited but developed a full blown abscess five weeks later, one was drained surgically eight days and another three days after the drug had been stopped. Of five retrotonsillar abscesses, four ruptured while the drug was being given and the fifth

came to a head three days after it had been discontinued. One peritonsillar abscess subsided temporarily with sulfanilamide but recurred six weeks later.

SUPPURATIVE CERVICAL ADENITIS

A final word as to the treatment of suppurative cervical adenitis that may result from any of these abscesses: In 12 instances, or 6.6 per cent, of our series, suppuration occurred. The incidence was inversely proportional to the age of the child, one half of them occurring before the fifteenth month. Cervical abscesses developed following seven retropharyngeal, four retrotonsillar and one peritonsillar abscess, the last in the youngest child in the series with that type of abscess. In addition to the factor of age there seems to be a direct relationship between the length of time that it takes for the abscess in the throat to come to a head and the likelihood of an eventual cervical abscess. We feel very strongly that these abscesses should not be opened until there is not mere fluctuation but definite advanced pointing with a thin walled glossy covering of the abscess cavity. A 5 mm. incision, if possible in a crease of skin for cosmetic purposes, together with drainage by means of a strip of rubber tissue or salvage edge of gauze for a couple of days is usually all that is necessary. If indicated, the incision can be kept open a few days longer by means of a groove director inserted just beyond the opening or by mere digital separation of the edges. The resulting scar is sometimes hard to find at a later time, a not unimportant item in an exposed area especially in the neck; and, again, the child is spared the greater pain of an early incision, the more prolonged drainage and the greater number of dressings.

There was 1 case in our series, the only one of its kind we have ever encountered, in which there was a direct communication between a cervical and a retropharyngeal abscess. This infant of 12 months entered the hospital with both a retropharyngeal and a cervical abscess, the latter, if anything, more advanced than the former, a very rare occurrence. When the abscess in the throat was opened the cervical abscess collapsed, and when pressure was made on the latter pus could be seen welling into the pharynx through the opening in the retropharyngeal abscess. Things seemed to progress favorably, but it was deemed more judicious to drain the cervical abscess externally five days later. Recovery was uneventful. In the older literature, especially, the advisability of opening some retropharyngeal abscesses externally nearly always comes up for discussion. It is hard to imagine any indication for external drainage of an acute abscess unless there is, as in this case, a free communication between the pharyngeal and the cervical abscess.

SUMMARY

In a clinical study of 250 cases of true and potential, or abortive, abscess in children under 14 years of age there were 181 abscesses and 69 cases in which suppuration did not occur. There were 82 retropharyngeal, 79 retrotonsillar, 11 peritonsillar, 1 parapharyngeal abscess and 8 of undetermined classification. There were two deaths following retropharyngeal and one due to parapharyngeal abscess. The total mortality was 1.7 per cent; that following retropharyngeal abscess alone was 2.4 per cent. Only one death was unquestionably due to an abscess itself, the parapharyngeal abscess. Complicating cervical abscess occurred in 6.6 per cent of the series.

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THE INCIDENCE OF PELLAGRA IN OHIO HOSPITALS

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In the extensive medical literature there is no study which gives any comprehensive appraisal of the general incidence of pellagra. Such reports as are available come from public health reports, mortality statistics and figures for hospitalizations in areas where the condition has long been recognized as a menace to health. Furthermore, there is no indication of the prevalence of pellagra in regions of this country where it has not been studied intensively.

As a consequence, there seems to be a widespread impression that this type of deficiency syndrome is very rare in the Northern states and exists only as a provincial problem peculiar to the endemic areas of the South. Indeed, case reports indicate that it is considered an exotic disease except in subtropical climates. For a number of years we have been engaged in the intensive study of pellagra in both sections of the country and have collected data which dispel any uncertainty concerning the wide distribution of nutritional deficiency in representative cities in both sections of the country.

Two previous reports of pellagra in Ohio, while indicating the occurrence, gave no indication of its incidence.¹ A comparison of available figures drawn from published records of hospital admissions in several regions of the United States throws light on the frequency of pellagra in the so-called endemic and non-endemic areas. While such variables as standards for hospitalization and readmission, diagnostic alertness and availability of adequate interim treatment and dietary adjustment are not the same in different places, a study of pellagra admissions reveals some interesting facts about the problem of inadequate nutrition reflected by very ill persons requiring hospitalization and about pellagra occurring as a sequel of other diseases.

MATERIAL AND METHOD

This report deals with the initial admissions of patients with the diagnosis of pellagra in the Lakeside Hospital, Cleveland, and the General Hospital, Cincinnati, and a comparison with admissions to hospitals in other areas. The Lakeside Hospital is a private institution with extensive facilities for teaching and investigation. The Cincinnati General Hospital is a municipal hospital where all the services are arranged for teaching purposes. The patients were all seen by members of the house staff and attending physicians and, during most of the year, by the special group doing research in nutrition. We have restricted the study to first admissions because the interest in pellagra stimulated by the nutrition research workers may well produce an arti-

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Drs. V. P. Sydenstricker, J. M. Ruffin and D. T. Smith supplied figures for admissions used in the text and tables.

From the Department of Internal Medicine, University of Cincinnati College of Medicine and the Cincinnati General Hospital, Cincinnati, and the Department of Internal Medicine, Western Reserve University, and the University Hospitals, Cleveland.

1. Fischer, J. L.: Pellagra in the North. *Ohio State M. J.* 21: 615, 1928. Hoerner, M. T.: Pellagra in Ohio: Fourteen Cases Occurring in Dayton, Ohio, During 1928-29. *Ohio State M. J.* 27: 296, 1931.

ficial factor increasing admissions. This trend would be seen especially in subsequent entries which are excluded from the tabulations.

We have included only cases presenting pellagrous glossitis and bilateral dermatitis, because these diagnostic criteria have been used in the reports tabulated for comparison (table 3). Since we have emphasized the very early change in the mucous membranes of the mouth and tongue as a specific index of nicotinic acid deficiency, many patients are now seen and successfully treated at an early stage of deficiency before dermatitis has occurred. A few have been observed for a time without any specific antipellagric remedy, and these patients eventually developed typical dermal lesions. Even using these criteria we feel certain that we are still overlooking many persons with larval or subclinical pellagra and related vitamin deficiency disorders. Glossitis and dermatitis indicate severe deficiency, comparable at different places and periods of time.

On this basis we have selected the records of 113 cases observed in Cleveland from 1931 through 1935 and 128 cases from Cincinnati seen in the five years ended with 1939. Prior to the beginning of each period represented, there was no special study of pellagra in either hospital (tables 1 and 2). The Cleveland cases

TABLE 1.—Incidence of Pellagra in the Lakeside Hospital, Cleveland

	Year					
	1930	1931	1932	1933	1934	1935
Medical ward admissions..	1,024	1,103	1,300	1,105	1,286	1,212
Cases of pellagra.....	2	16	18	23	23	16
Percentage.....	0.2	1.4	1.4	2.4	2.3	1.5

constituted 1.5 per cent of all medical admissions, and the Cincinnati cases 0.95 per cent. The yearly increase in the number of cases diagnosed at each hospital probably reflects the interest stimulated by the intensive study of nutrition. The figures may well be interpreted as a result of dissemination of diagnostic skill rather than an increase in incidence.

RELATED STUDIES IN THE LITERATURE

Cases of pellagra are classified as endemic, alcoholic or secondary, depending on the chief cause of the vitamin deficiency. Among the endemic are included those in which food fads, idiosyncrasies, such as vegetarianism, and some ill devised therapeutic diets figure as well as those in which it has not been possible to obtain proper food. In alcoholic pellagra the vitamin wants have not been satisfied because the beverage alcohol, the chief source of calories, ordinarily contains none and the diet does not make up the deficit. The term secondary pellagra includes cases in which the diet, satisfactory for the ordinary requirements of health, is inadequate when some disease obstructs the intake, accelerates the loss or raises the needs for the vitamin rich foods. The resulting pellagra is intrinsically the same whatever the manner of its origin.

There are several reports of hospital figures on pellagra in various Southern states prior to 1930, but data are not available for comparison with total hospitalizations. Boggs and Padget,² in a study of pellagra in the Baltimore City Hospital from 1911 through 1930 inclusive, found 102 cases in 16,572 admissions, an inci-

dence of 0.68 per cent. There were a few more in the alcoholic class than either endemic or secondary subgroups. In many instances a number of factors could be considered as contributing to the failure of nutrition, but it had been possible to classify each case on the basis of the primary underlying cause.

TABLE 2.—Incidence of Pellagra in the Cincinnati General Hospital

	Year				
	1935	1936	1937	1938	1939
Medical ward admissions	3,173	3,169	2,440	2,293	2,482
Cases of pellagra.....	8	23	28	35	34
Percentage.....	0.3	0.7	1.2	1.5	1.4

Musser,³ reporting on the pellagra admissions to the Charity Hospital, New Orleans, for the years 1925 through 1931, found 751 cases in a total of 237,570 admissions, or an incidence of only 0.31 per cent. These were for the most part endemic cases, but some fell into the secondary and alcoholic groups.

J. S. McLester⁴ found that admissions for pellagra at the Hillman Hospital, Birmingham, Ala., represented 0.83 per cent of all admissions for the period from 1920 to 1933. These were largely endemic cases. Studies on a large number of pellagrins treated as ambulatory patients have been going on in the Nutrition Clinic of the Hillman Hospital for five years under the direction of one of us (T. D. S.) and although several thousand have been observed only a few were admitted to the hospital. It should be pointed out that these figures might indicate that pellagra is more rare in certain Southern hospitals than in those we are reporting. This is because pellagrins are not ordinarily admitted unless they are considered emergency cases in many Southern municipal hospitals. In former years, severe pellagra was considered hopeless and mild pellagra not a sufficient reason for hospitalization.

Two more series are available in Harris's textbook⁵ on pellagra. These include the records of Sydenstricker⁶ for a twenty year period at Atlanta, Ga., and those of Ruffin and Smith⁷ for a ten year period at Durham, N. C. By additional information for-

TABLE 3.—Reported Incidence of Pellagra in Seven American Municipal Hospitals

Place	Period	Cases of Pellagra	Admissions	Percentage	Average Yearly Pellagra Admissions
Baltimore City Hospital.....	1911-30	102	16,572	0.68	5
Charity Hospital New Orleans).	1925-31	751	237,570	0.31	125
Hillman Hospital (Birmingham, Ala.)	1920-33	...	...	0.83	...
	1920-29	650	26,000*	1.8	22
	1930-32	237	26,274	0.9	21
	1930-35	111	7,186†	1.5	10
	1915-39	128	13,571†	0.95	26

* Approximate.

† Medical admissions.

warded by these investigators, we have compiled the figures for the proportion which pellagra admissions bore to total hospital entries. For the Georgia clinic

3. Musser, J. H.: Some Notes on Pellagra, *Lihman Anniversary Volume 2*: 877, 1932.

4. McLester, J. S.: The Nature of Pellagra: A Critique, *Ann. Int. Med.* 8: 475, 1934.

5. Harris, Seale: *Clinical Pellagra*, St. Louis, C. V. Mosby Company, 1941.

6. Sydenstricker, V. P., cited by Harris; * personal communication to the authors.

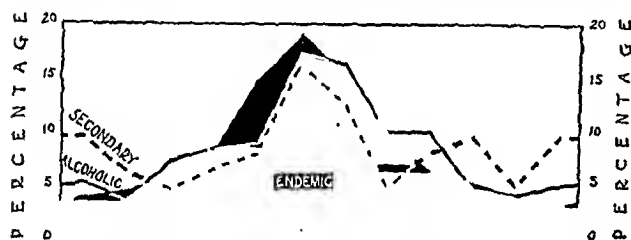
7. Ruffin, J. M., and Smith, D. T., cited by Harris; * personal communication to the authors.

2. Boggs, T. R., and Padget, Paul: Pellagra, *Johns Hopkins Hosp. Bull.* 50: 21, 1932.

there was an average of 33 pellagrins for 1,800 ward admissions for each of the twenty years. The incidence of pellagra was 1.8 per cent. The figures of Ruffin and Smith were correlated with admissions to the medical wards. For the ten year period ended in 1939 there were 237 admissions for pellagra among a total of 26,279 admissions to the medical wards, an incidence of 0.9 per cent. At the Duke Hospital only about half of the pellagrins seen in the clinic were admitted. These figures are tabulated for comparison with the Cleveland and Cincinnati groups in table 3.

The figures in table 3 may be compared with those given by Raman⁸ for a general hospital in the Province of Madras, India. In this hospital it was found that pellagra accounted for 0.65 per cent of all cases admitted to the medical wards. This is only an indication of the worldwide prevalence of pellagra. Whenever this disease is sought, it is found among the debilitated patients of large hospitals.

From these figures we can readily see that pellagra is an important medical problem in all these hospitals. Furthermore, it is at once apparent that the disease is by no means confined to certain regions of the Ameri-



Monthly incidence of alcoholic and secondary pellagra as compared with endemic pellagra. The secondary and alcoholic groups are from this paper; the endemic group is taken from the report of Smith and Ruffin.¹⁰

can Southern states but is found in areas where it is not generally thought of as an important problem. The percentages are not comparable because the pellagra admissions are compared in part with medical admissions and in part with total hospital entries. This makes the figures compared with medical admissions appear high. In the Cleveland and Cincinnati figures, no cases of readmissions are included. This reduces the total number by about half. Nonetheless, one must conclude from these figures that pellagra is an important hazard in regions not considered to have a pellagra problem. The Ohio cases are preponderately secondary to organic disease or chronic addiction to alcohol, but many resulted from dietary restriction, whether obligatory, ill advised or wilful.

It must be emphasized that the number of cases in the tables indicate only a fraction of patients with vitamin deficiency. No persons with ariboflavinosis and neuritis are included. It was estimated by Goldberger that for every person with typical clinical pellagra there are from twenty to a hundred with varying states of inadequate nutrition. Even this proportion omits the vast number of people whose diet, though not actually deficient and responsible for no recognizable disease, is far from the optimum for best health and vigor. From our experience we can state that hesitancy to make the diagnosis of pellagra without the terminal triad of dermatitis, diarrhea and dementia has been costly in lives and has retarded understanding of the disease. In any vitamin deficiency state early specific therapy is

more valuable than that which comes later when the disease is advanced and appears in its textbook form. From a careful review of prodromal symptoms observed for varying periods before the cases became well established, we are learning to recognize a nascent deficiency syndrome before any physical sign is manifest. For these reasons we have made surveys of the nutritional status of patients in the medical wards of the Cincinnati General Hospital. In spite of the extreme difficulty of obtaining reliable information about the past diet, a rough classification is possible. Preliminary studies indicate a high proportion of patients whose nutrition ranges from borderline to obvious deficiency. History of prodromal symptoms or objective manifestations of nicotinic acid, riboflavin or thiamine deficiency have been found in approximately 10 per cent of a series of 345 medical patients admitted to the wards for some other condition.

While alcohol addiction, particularly if complicated by cirrhosis, was a frequent cause, gastrointestinal, cardiovascular and pulmonary disorders were the most frequent predisposing causes. Acute infections were important in precipitating the development of clinical signs of vitamin deficiency disease. In almost every case there were several factors militating against adequate nutrition: previous inadequate diet, anorexia, fever, alimentary tract disorders, vomiting, diarrhea, liver disease, cardiac failure and many other circumstances. This reemphasizes the complicated substratum on which pellagra is engrafted and helps to explain some of the many vagaries of this disease.

SEASONAL VARIATION

It has been known for a long time that the incidence of outbreaks of pellagra rises in the spring to reach a peak in the early summer. We have therefore examined our material for the month of admission with pellagra, or the month of its detection if it developed in the hospital. Careful review of the histories reveals that clearcut evidence of glossitis or erythema appeared four to six weeks before admission in most cases. In the chart we have compared the percentage of each type classed as primarily alcoholic (169) and secondary (63) cases in this series with a table based on many thousand endemic cases compiled by Smith and Ruffin.⁹ Our figures include the ten year period that ended with 1939, while those from Ruffin and Smith are for the first five years of the same period. Since the alcoholic and secondary cases from Ohio follow the same trend as the endemic cases from the Southern states, we believe that this reemphasizes the essential unity of pellagra of endemic, alcoholic or secondary origin first stressed by Spies and deWolf.¹⁰ It also suggests that factors other than summer sunlight are important in this seasonal tide in pellagra.¹¹ Besides variation in food, it will be important to investigate such factors as fluctuations in metabolism, bodily activity and infections for their influence on the pattern of seasonal incidence.

COMMENT

In this study we have presented evidence that typical pellagra, the hallmark of advanced disproportion between nicotinic acid amide supply and requirement,

9. Smith, D. T., and Ruffin, J. M.: Effect of Sunlight on the Clinical Manifestations of Pellagra, *Arch. Int. Med.* 59: 631 (April) 1937.
10. Spies, T. D., and deWolf, H. F.: Observations on the Etiological Relationship of Severe Alcoholism to Pellagra, *Am. J. M. Sc.* 186: 521, 1933.
11. Smith, J. H.: The Influence of Solar Rays on Metabolism, *Arch. Int. Med.* 48: 907 (Nov., part 2) 1931. Sydenstricker, V. P., and Armstrong, E. S.: A Review of Four Hundred and Forty Cases of Pellagra, *Arch. Int. Med.* 59: 883 (May) 1937. Smith and Ruffin.⁹

8. Raman, T. V.: Pellagra in India, *Indian J. M. Res.* 37: 743, 1940.

is a serious problem in two large hospitals in Ohio. While our figures are not suitable for exact comparison with other reports, it is obvious that pellagra is prevalent in Northern states. We believe that variations in its reported incidence depend on variations in recognition as well as true prevalence. Furthermore, clinical pellagra indicates advanced breakdown in nutrition. As the visible part of an iceberg, it may be the signal of widespread but subsurface danger in population groups under consideration.

In the present state of our knowledge, it is not possible for the practicing physician to derive much help in diagnosis from the complicated laboratory procedures used in nutritional research. Pellagra, beriberi and riboflavin deficiency have been found whenever an intensive search has been made in hospitals caring for large numbers of patients with serious disease. Secondary pellagra is recognized as a potential menace whenever familiarity with its early manifestations parallels careful clinical search for its presence where it is apt to occur. Unwise use of alcohol and ill advised diets used for reduction of obesity, treatment of peptic ulcer or control of diabetes frequently predispose to pellagra. While a careful appraisal of the history of dietary deficiency is still subject to many pitfalls, it should direct attention to the nutritional status of persons in whom it may be impaired. This is imperative wherever a combination of obstacles is placed in the way of proper nutrition. Any chronic illness or acute febrile disease, in addition to disorders of the alimentary canal, liver, heart and lungs which decrease available food when it is most needed, should be adequate warning of an impending deficiency.

Surgical operations on persons who have been suffering from some disease itself interfering with proper nutrition are apt to precipitate clinical signs of a deficiency syndrome. Shock, hemorrhage, anesthesia, nausea, vomiting, infection and fever, large quantities of parenteral dextrose and physiologic solution of sodium chloride, which not only increase carbohydrate metabolism but may effect a diuresis wasting vitamin stores, all oppose normal nutrition. Deficiency diseases may occur as an untoward sequel of operations under such conditions.

SUMMARY AND CONCLUSIONS

The data in this paper are presented as a progress note in a study of pellagra and related vitamin deficiency disease begun by one of us twelve years ago. It is at once apparent that pellagra is widely prevalent. For the two Ohio hospitals studied typical pellagra was found in 1 to 2 per cent of the medical admissions. This figure was doubled when readmissions were included.

The true incidence of pellagra appears to be underestimated. This is due in part to failure to suspect, to recognize and to report cases. Shifting emphasis toward the early signs of deficiency has revealed a higher incidence than that indicated by such studies as we report here.

Typical pellagra is the response of individuals to advanced or severe deficiency of the antipellagra factor. Such cases represent only a small proportion of persons whose inferior nutritional status is a handicap which may prove perilous in the presence of other diseases. This study does not include the large number of persons in whom malnutrition manifests itself as ariboflavinosis or neuritis.

PRESENT KEY PROBLEMS IN TUBERCULOSIS

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The sharpest controversy is now focused on three problems in tuberculosis:

1. Is a negative or a positive tuberculin reaction more desirable?

2. Are the lesions developing in recently exposed young adults of "primary" or "reinfection" type?

3. From what point should one date the clinical incipience of tuberculosis?

With regard to these three questions, it is in the first place to be emphasized that they have arisen only recently and are the result of the epidemiologic conditions which have developed in our midst within the last generation.

Previously in most communities it was true for the vast majority of persons that they become positive tuberculin reactors by the time they reached adolescence; that, while primary infections occurred in childhood, progressive pulmonary tuberculosis developed mostly only in early adult age; that a latent interval of a decade usually elapsed between the time of the infections and the evidence of progressive disease.

Only since the development of pulmonary lesions in tuberculin negative young adults has been observed in direct consequence of recent exposure has the question arisen whether these lesions are of primary or reinfection type.

Only since progressive disease following exposure and conversion from negative to positive tuberculin reaction has become a common observation has the question arisen. From what point should one date the clinical incipience of tuberculosis?

It is our contention that a rational answer can be given readily to these questions, but the answer will be different according to the epidemiologic environment in question. Failure to consider the factor of the epidemiologic environment is at the bottom of most of the misunderstanding and dispute over these questions. It is particularly true that there is lacking appreciation of the role of the epidemiologic environment in determining the character of tuberculous infections and the evolution of these infections in the majority of persons in the community in question.

This thesis will be best understood when applied to the discussion of the three key questions. Before entering on the discussion, to aid understanding, I present a brief review of the epidemiologic background of tuberculosis in the form of a table which speaks for itself. All we need to add here is a brief comment on the epidemiologic environment now prevailing in this country to which the present discussion is essentially applied. It is important to know that while the country as a whole has already gone ahead a long way on the downgrade phase of the epidemiologic cycle, there are sections, areas and racial groups within the country and in the midst of our communities still showing features of a high level of tubercularization. It may be said that in these "nests" (Frost) tuberculosis is still at its epidemiologic peak. The differences between some already greatly detubercularized and some still highly

tuberculized groups are now much accentuated in a manner which should be clear from the table and the discussion of the three key questions which follows.

QUESTION 1.—Is a negative tuberculin reaction more desirable than is a positive one?

ANSWER.—A negative tuberculin reaction is more desirable in a nontuberculized environment while a positive one is more desirable in a tuberculized environment.

REASONS.—*Facts.*—Tuberculosis is all the more serious a disease, the less prevalent tuberculous infections are in the community in question. Conversely, the more tuberculosis there is in a community the more are infections tolerated without producing disease.

The greater the number of negative reactors in the community, the greater the clinical significance of the fewer positive reactions, because a greater proportion of the latter will represent infections severe enough to lead to progressive disease. Conversely, in a community

Features of Three Epidemiologic Phases

	Upgrade	Peak	Downgrade
Community	Virgin	Tuberculized fully	Detubercullization; focalization
Mortality	Rising	Highest	Declining steadily
Morbidity	Rising	Highest	Declining steadily
Resistance	Low but rising	High	Beginning to decline
Allergy	Low but rising	High, prevalent and permanent	Declining incidence evanescent character resensitization
Contact	Increasing	Widespread and severe	Declining, particularly in severity and frequency
Infection	Rising incidence	Prevalent before adult age reached	Declining incidence particularly before adult age
Reinfection	None	None, hardly ever before middle age	Rising incidence throughout adult age
Disease	Acute and subacute generalized forms	Chronic endogenous phthisis and chronic hematogenous forms	Chronic exogenous phthisis
Latency	Infrequent, short	Prevalent and long between primary and chronic pulmonary tuberculosis between bouts of hematogenous dissemination	Declining and shortening between primary and chronic pulmonary tuberculosis

where the great majority are positive reactors the clinical significance of the latter is much less, relatively speaking, as the greatest proportion of such reactions represent only recurring contact.

Contact is always dangerous to tuberculin negative adults because these are presumably coming from a nontuberculized environment. The danger is particularly serious if contact occurs in a highly tuberculized environment (tuberculosis institution, homes of patients with open tuberculosis). In adults who have grown up in a tuberculized environment a positive tuberculin reaction is a sign of an infection long overcome and hence an asset.

It should be remembered, however, that in very young adults a positive tuberculin reaction may be a sign of only recent first infection the outcome of which is still unsettled. There is evidence that added exposure during this early phase of the infection is not healthful and may be harmful.

Interpretations.—In highly tuberculized communities the opportunities for exposure are so constant and ubiquitous that everybody is infected already in childhood and continues to be exposed to reinfection throughout life. Universally the first infection is

severe. In most cases it is enough to give permanent allergy. In a relatively small proportion of persons in the community as a whole, but in a considerable total number of people, the first infection is severe enough to leave lesions which remain susceptible of reactivation under the various exigencies of life, which is the so-called endogenous reinfection tuberculosis. Morbidity and mortality from the disease are high in such a community but the fatality of tuberculosis, considering the prevalence of this infection, is low. There prevails obviously very strong resistance to tuberculosis which is manifestly based on properties acquired by the first infection, which includes allergy. The vast majority of tuberculin positive reactors are safe in such a community.

Tuberculin negative individuals are safe only in a highly detuberculized community, where they may long remain uninfected or where infections are of a very much less severe type. Severe type of exposure is liable to become rather harmful to tuberculin negative individuals. Recent observations have demonstrated that a larger proportion of tuberculin negative adults so exposed will develop progressive lesions than is the case with already tuberculin positive individuals. It has been a long established fact that boys or girls who come from less tuberculized rural sections and become overexposed in a highly tuberculized city often develop disease. In the new epidemiologic environment we are dealing essentially with the same phenomenon in a somewhat different form and wider scale.¹

QUESTION 2.—What is the character of the lesions that are developing now in recently exposed young adults? Are we dealing with "primary" or "reinfection" type lesions?

ANSWER.—In some instances we may be dealing with a truly first infection lesion. In other instances we may be dealing with lesions due to a recurrent infection. Both of these may have some features of a "primary" type yet follow the course of "reinfection" type tuberculosis; hence they cannot be told apart.

REASONS.—*Facts.*—True adult "primary" infections of identical course with childhood primaries ending up in calcified residues of the classic Ranke complex are not at all uncommon now when first infections have become postponed into adult age. "Primary-like" lesions produced by recurrent infections following evanescence of a preceding mild infection and its allergy are also quite common now. These too often end up in a residue which is in no way different from the classic calcified Ghon focus.

Progression to chronic pulmonary tuberculosis may occur now from truly "primary" but more often from the just described "primary-like" lesions, both of which represent exogenous fresh invasions.

Interpretations.—Under the present epidemiologic conditions a negative tuberculin reaction no longer indicates a noninfected state. Lesions arising after recent exposure in tuberculin negative individuals may now represent either true "primary" or "primary-like" recurrent infections. Not only is it impossible to tell these apart but there seems to be little reason for such separation.

In the first place our observations indicate that even recurrent infections with "primary-like" lesions may proceed to chronic phthisis not directly from the initial

¹ At this juncture may we point to our prediction (*The Journal*, Oct 12, 1940, p 1295), on the basis of the foregoing considerations, that a rise in tuberculosis mortality will soon have to be faced in this country. The current statistical data already available indicate clearly such a trend becoming manifest first in the greater population centers.

exogenous focus but rather indirectly from the lymphohematogenous secondary foci in the apical and sub-apical portions of the lungs. Then it is conceivable that in the present epidemiologic phase even true first infections might produce "reinfection type" rather than "primary type" tuberculosis. This is just what Israel and his co-workers have recently assumed.

If I understand these workers of the Phipps Institute correctly, they advocate the revolutionary step of discarding altogether the concept of "primary tuberculosis" built on the enormous amount of experimental pathologic and clinical work of two generations since Parrott, Kuss, Ghon and others. Current observations led these workers to the following three interpretations: 1. Tuberculous first infections, which occur now mostly in young adult life, rarely produce primary type lesions. 2. Young white adults of this country respond to first infection with reinfection type lesions. 3. The response to tuberculous infection is determined by the character of the individual resistance and not by the presence or absence of previous infection.

The last explains the first and second points of this concept, which may probably be best described as an immunobiologic explanation of the current changes in tuberculosis. Undoubtedly this concept has been inspired by the results of Lurie's experimental work, which has emphasized the role of natural resistance in determining the character of the infection.

The concept presenting epidemiologic causes for the changing features of tuberculosis is less revolutionary, more simple and yet far reaching.

That the character of infections should change with the changing epidemiologic cycle has been a long emphasized fact. It is expressed in the general concept that the character of the epidemic determines the character of disease in all infections. It stands to reason that tuberculosis is no exception to this rule. Indeed, Frost years ago sufficiently emphasized the changing aspects of the tuberculous infection with the shifts in the epidemiologic environment. The latter we believe is a more logical explanation of the currently observed changes in tuberculosis. Point for point the logic of the latter concept as against the former might be stated as follows:

1. In the first place it is more logical to assume that "primary complexes" have become too mild, transient and inaccessible to clinical demonstration than to say that they no longer occur. As a matter of fact there is direct proof of increasing mildness of "primary complexes" already in the past. The rising incidence of evanescent tuberculin reactions in recent years indicates their complete obsolescence.

2. In the second place, it is hardly logical to insist on the "reinfection type" character of any tuberculous lesion now when distinction between the "primary" or "reinfection" type is admittedly no longer possible.

3. Finally it seems more logical to assume that recent rapid shifts in the epidemiologic conditions have had a more profound effect on the incidence and conditions of exposure than on individual resistance. We readily concede that in the present epidemiologic cycle people evince more natural resistance but postulate that primary infections have become more obsolescent because the conditions of exposure have materially changed.

QUESTION 3.—From what point should one date the clinical incipience of pulmonary tuberculosis?

ANSWER.—In very acute tuberculous processes the point of clinical incipience may readily be fixed to coincide almost with the time of first infection.

In very chronic tuberculous processes the clinical incipience cannot be fixed even with the appearance of the first demonstrable lesion.

REASONS.—*Facts.*—Tuberculosis is a process the evolution and pathogenesis of which differ with the character of the infection, which in turn changes with the epidemiologic conditions. In the epidemiologic upgrade phase the process is so rapid that it may be said to begin with the first invasion of the bacilli and their beginning multiplication at the site. At the epidemiologic peak the process is still set in motion by the first infection, but its evolution is so insidious that between the infection and the first clinical symptoms the period of latency may be one of years or even decades. Finally in the epidemiologic downgrade phase the process may require more than one infection to set it in motion and the evolution period shows the widest range from a few weeks to many years.

Interpretations.—Whether it is more logical to date the onset of pulmonary tuberculosis from the time a healthy person has first begun to react to tuberculin than it is to date it from the time a lesion has first become demonstrable by x-ray examination in his lungs will depend on age and place. This refers to the age of the person and the epidemiologic environment from which he comes and is living in. In persons reared and living in a highly tubercularized environment a positive tuberculin reaction is only to be expected. Here x-ray lesions are more often only potential and by no means definitely established phthisis. The vast majority of such lesions found in people in such an environment are definitely known to undergo more or less complete resolution and ultimate healing without ever producing clinical disease.

In persons coming from a highly detubercularized environment a positive tuberculin reaction may at times mark already the onset of disease. More often, however, there is a latency period of variable length during which presence or absence of a demonstrable lesion in the lungs is no criterion for the time of onset of phthisis. On one extreme there will be cases with such acute clinical onset that even the first positive roentgenogram shows already too extensive involvement. On the other extreme there will be cases in which the lesion first becoming demonstrable in the lungs remains for many months or years unchanged until finally its breakdown gives rise to progressive phthisis very abruptly.

The practical significance of the foregoing may now be stated as follows:

1. The younger the individual and the more detubercularized the environment, the greater the clinical significance of a positive tuberculin reaction and the phthisical potentiality of x-ray lesions.

2. Young people attending tuberculous patients must be very closely watched. Tuberculin negative persons are especially in danger. Even the tuberculin positive persons, if young, may have become positive only very recently and therefore are still not out of danger.

3. Since one cannot now tell apart the primary from the reinfection type lesion, all newly discovered x-ray lesions in young adults must be treated as potential phthisis, i. e., by a period of observation under rest.

4. On the individual himself and the local epidemiologic conditions must depend in each case determination of the point from which a newly arisen positive tuberculin reaction should be considered merely a sign of infection or an indication of clinical tuberculosis in need of treatment.

AN EPIDEMIC OF COCCIDIOIDAL
INFECTION (COCCIDIOIDO-
MYCOSIS)

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An epidemic of coccidioid infection would have been inconceivable five years ago. Then the usually fatal coccidioid granuloma was the only recognized form of infection by *Coccidioides immitis*. During 1936-1938 Gifford¹ and Dickson² proved that this fungus more frequently produces mild infections. Many of us are still conditioned by the former conception of coccidioidomycosis as a deadly disease. We hope that the record of this small epidemic will emphasize the frequency and usually benign character of coccidioid infection in its endemic areas.

These endemic regions are, like the site of our small epidemic, semiarid with hot, dry and dusty summers and autumns. The most publicized is the San Joaquin Valley, the southern component of the great central valley, of California. Other parts of southern California, Arizona, Texas and probably New Mexico and Mexico are endemic centers. Sporadic cases have been reported elsewhere in North America and Europe. The only other known endemic area is the dry Chaco region of South America. Many investigators have associated these dusty, arid qualities with the theory that the infection is generally acquired by the inhalation of *Coccidioides* chlamydospores. These spores, which develop in the mycelial form of the fungus, are extremely infectious. The fact that coccidioidomycosis does not pass directly from host to host³ indicates that the endosporeulating spherules, characteristic of *Coccidioides* in man and animals, are not well adapted to disseminating the infection. These deductions explain other features of the epidemiology of acute coccidioidomycosis such as the maximal incidence in the dusty season,³ the rapidity with which the infection is acquired³ and the ultimate infection of more than three quarters of the long time residents.⁴ The previous recovery of *Coccidioides* from one set of samples of San Joaquin Valley soil⁵ is convincing corroborative evidence. The epidemic described here summarizes this entire epidemiologic concept.

The protean symptomatology of coccidioid infection is also illustrated in this outbreak. We now recog-

nize that the symptoms of an initial infection are variable. Cases are usually diagnosed "flu" or "bronchitis," although many rarer diagnoses are also made.³ In from 2 to 5 per cent of such patients erythema nodosum and/or erythema multiforme develops, a symptom complex known colloquially as "San Joaquin fever," "valley fever," "desert fever" or "desert rheumatism."

This first reported epidemic of primary coccidioidomycosis involved 7 out of 14 Stanford University students and faculty members. On the afternoon of April 26, 1940 this group of 10 graduate and undergraduate students together with 4 faculty members left the Stanford campus on a biology field trip to San Benito County, Calif.

San Benito County is 100 miles southeast of San Francisco astride the Coast Range Mountains. While many parts of the county are well watered and produce diversified crops, those portions on the eastern slopes are quite dry. The Panoche Valley, separated from the San Joaquin Valley only by a low range of hills, averages but 8 inches of rain a year. In the spring the region is suitable for grain raising and grazing, though in the hot parched summers and autumns the country is sere.

The first night the party camped near the highway south of Hollister, the county seat. The following day was devoted to scouring the hills and valleys and collecting a variety of specimens: insects, arthropods, reptiles, flowers and plants. The night of April 27 was also spent in the open in the San Carlos Mountains, part of the Coast Range. On the following day the group returned to Stanford University.

On May 6, O. C., a graduate student aged 21, felt feverish and weak but had little malaise. He tried to overcome his indisposition with strenuous workouts. However, his illness grew worse and on May 8 he reported to the Men's Health Service. Because of a temperature of 103 F. he was hospitalized by one of us. A roentgenogram of the chest, taken because of some suspicious "tinkles," revealed multiple circumscribed densities. Various diagnostic tests including blood cultures, sputum examinations and cultures, serologic tests and coccidioidin tests were performed but failed to reveal the cause of the illness, although 10 mg. of coccidioidin produced some erythema with induration.

In the meantime five of the other students became ill: R. R. also on May 6, A. S. on May 7, D. S. and W. G. on May 10 and B. M. on May 11. All showed roentgenologic evidence of pulmonary consolidation or other pathologic process. Tests with 0.1 mg. of coccidioidin on 2 (A. S. and D. S.) were faintly positive and on B. M. strongly positive. However, examinations of the sputum were incomplete and the cause of the epidemic remained unknown.

The condition of all except the first patient (O. C.) gradually improved. He failed to respond to treatment, continued to have a high fever and his roentgenograms appeared worse. On May 24 he was moved to the Stanford University Hospital in San Francisco for further diagnostic study. A test with 0.1 mg. of coccidioidin was repeated on May 26 and produced definite induration measuring 12 by 12 mm. in twenty-four hours. Gastric lavage was performed the day that the coccidioidin test was seen to be positive and a few suspicious spherules were seen. (*Coccidioides immitis*

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From the Men's Health Service of Stanford University (Dr. Davis), the Women's Health Service (Dr. Ruth T. Smith) and the Department of Preventive Medicine, Stanford University School of Medicine.

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was subsequently proved by cultures and animal inoculations.) Fluoroscopy and roentgenograms on May 27 revealed that a cavity had developed in one of the consolidated areas. Moreover precipitin and complement fixation tests on his serum were positive for coccidioid infection.

After the diagnosis of active coccidioid infection was established, blood was drawn for sedimentation and precipitin tests from the other members of the expedition who had symptoms. Specimens of sputum were collected from all who could furnish any. Coccidioidin tests were repeated on most of them.

On June 4 all 13 of the group who were still on the university campus (O. C. was in the Stanford University Hospital) were assembled. Histories were taken of the movements of each person while on the field trip

results. Three others of the faculty group had positive coccidioidin reactions but negative precipitins, normal sedimentation rates and entirely normal blood pictures. One (Professor A.) had taught for some time years before in Rosedale near Bakersfield in the San Joaquin Valley, where *Coccidioides* is endemic. Professor W., also with a positive coccidioidin reaction, had taught near Bakersfield at McFarland. While he was in the San Joaquin Valley, he had a severe respiratory illness which was diagnosed tuberculosis and was sent to a sanatorium for several months. However, tubercle bacilli were never recovered from his sputum and his illness may well have been coccidioid. Miss T., also with a positive coccidioidin test, had made many field trips in the San Joaquin Valley and in San Benito County. She recalled no respiratory or other "flu-like" illness.

Clinical History of Students and Faculty Members Making Up Field Trip

Name	Sex	Present at Rattle-snake Hole	Previous Contact with Endemic Areas	Incubation Period	Symptoms										Coccidioides in Sputum		Coccidioidin Test, Days from Exposure		Blood Changes				Roentgeno-graphic Changes
					Cough	Pleurisy	Fever	Nightsweats	Malaise	Headache	Backache	Anorexia	Weakness	Days After Exposure	Result	Negative	Positive	Serologic Tests (Pre-cipitin and Comple-ment Fixation)	Sedimentation Index (Outlier)	Maximal White Blood Cells	Maximal Lympho-phils		
O. C.	♂	+	?	9	+	++	+	+	++	+	+	+	+	30 to 45	+	..	26	+	26	17,700	8%	+	
A. S.	♀	+	0	10	+	+	+	+	+	+	+	+	+	42	+	Faint 25	35	+	23	20,550	5%	+	
W. G.	♂	+	0	13	+	("Tight-ness")	+	+	+	+	0	+	+	33	—	..	38	+	20.5	15,000	5%	±	
B. M.	♀	+	0	14	+	("Tight-ness")	+	0	+	+	+	+	+	33	—	..	27	+	23	15,800	6%	+	
R. R.	♀	+	0	9	+	+	+	+	+	+	+	+	+	33	+	..	33	+	14	11,700	10%	+	
D. S.	♀	+	0	13	+	+	+	+	+	+	Neck	+	+	33	+	Faint 27	38	+	23	11,000	8%	+	
J. B.	♀	+	0	Not definite	±	0	0	0	0	0	0	0	0	43	—	..	33	+	13	12,200	6%	+	
Miss T.	♀	+	+	0	0	0	0	0	0	0	0	0	0	33	—	..	39	—	2.5	8,400	2%	Fluoroscopy negative	
Dr. W.	♂	+	+	0	0	0	0	0	0	0	0	0	0	31	—	..	39	—	1	6,400	2%	..	
Prof. A.	♂	—	+	0	0	0	0	0	0	0	0	0	0	33	—	..	39	—	6	7,600	2%	..	
J. G.	♀	—	0	0	0	0	0	0	0	0	0	0	0	33	—	34	0	—	6	8,300	1%	Slight accentuation of bronchovascular shadows at right base	
H. W.	♂	—	0	0	0	0	0	0	0	0	0	0	0	31	—	39	0	—	2	4,100	2%	—	
B. H.	♀	—	0	0	0	0	0	0	0	0	0	0	0	33	—	39	0	—	5	10,300	8%	Fluoroscopy showed heavy root markings; x-ray entirely normal	
Mrs F	♀	—	?	0	0	0	0	0	0	0	0	0	0	33	—	39	0	—	6 (80')	10,650	No dif-ferential count	Fluoroscopy negative	

and of any subsequent illnesses. Coccidioidin tests were performed on those who had not yet been tested, blood counts made, erythrocyte sedimentation rates determined and blood removed for precipitin tests. More sputum cultures were also obtained.

On the basis of the positive coccidioidin reactions, positive precipitin tests, rapid sedimentation rates, characteristic blood counts and densities in their roentgenograms, all 6 students who had been ill were judged to have had primary coccidioid infections. Four of the group had *Coccidioides immitis* recovered from their sputums. One other student, J. B., felt well but had a positive reaction to 0.1 mg. of coccidioidin, a positive precipitin test, accelerated sedimentation rate and eosinophilia, bringing the total to 7 infections. The remaining 3 students had been well, gave negative coccidioidin reactions, had normal sedimentation rates and normal blood counts (one had 8 per cent eosinophils) and their serums did not show precipitins. One of the faculty group (Mrs. F.) similarly gave negative

One of the most interesting aspects of the epidemic was the suggestion as to where the fungus could have been inhaled. The nature of the epidemic suggested that the infected students must have had a common massive exposure which the 4 negative to coccidioidin did not experience. The 3 coccidioidin positive faculty members might or might not have been exposed, previous studies having indicated that one infection apparently results in an immunity.

The way the groups traveled in their automobiles precluded dust from the road as the cause, since uninfected students were in each auto load. At night the blankets were laid directly on the ground, but the infections were so scattered that no common exposure could have been possible. The manner in which the groups worked in their specimen hunting obviated any possibility of a suitable exposure except for one occasion: When the expedition was in the Panoche Valley on April 27 it stopped along a creek bank to collect flowers and explore an abandoned quick-silver mine. Some one

observed a rattlesnake which crawled down a ground squirrel hole. O. C. began digging industriously. Later he recalled the occasion because the dust was so dense and he was in the thickest of it. He was assisted or surrounded by all the other students who were infected, and also by Professor W. and Miss T., who, it has been shown, apparently had experienced a previous infection with *Coccidioides*. However, the 4 giving negative reactions to coccidioidin (Mrs. F. and 2 of the 3 students) were not anywhere near the digging, and the third student, W., was not close at hand either.

Thus circumstantial evidence strongly implicated the vicinity of the rattlesnake hole. In August 1940 one of the recovered students guided one of us back to the spot. Specimens of the soil were collected and from them *Coccidioides immitis* was recovered.

COMMENT

Not only is the mechanism of coccidioidal infection verified but also is resistance to exogenous reinfection substantiated. The incubation periods, nine to fourteen days, are likewise in accordance with the range previously established.³ Among the cardinal symptoms and signs summarized in the accompanying table, the pain or "tightness" in the chest is the most useful in a differential diagnosis. It is to be noted that none of the patients had erythema nodosum or multiforme.

REPORT OF CASES

CASE 1.—O. C., a male graduate student aged 21, was born in San Francisco and lived there all his life except that from 1934 through 1936 he lived in San Mateo and since 1936 he has been at Stanford (Palo Alto), and also during some summer vacations. In the summer of 1938 he worked on an Associated Oil tanker on the Sacramento and San Joaquin rivers. He did not go inland farther than 2 miles. In the summer of 1939 he visited friends in Fresno on week ends. He has also made occasional visits around Tracy and a few trips through the San Joaquin Valley.

On May 6, 1940, nine days after returning to Stanford from his rattlesnake digging in San Benito County, he suddenly felt weak and feverish. However, he had no actual malaise and attempted to throw off the illness with a vigorous workout followed by a half mile swim. The following day, May 7, the fever persisted, his appetite left him and a severe backache developed which lasted until the next day. He also began to cough and the coughing continued for a month and a half. On this second day of illness, despite his feeling of weakness, he played football for two hours. On awakening May 8 he felt "jittery" and so weak that he could hardly climb out of bed. To the other symptoms was added a severe frontal headache; at last admitting he was ill, he consulted the Men's Health Service. When the patient's temperature was found to be 103 F. he was sent to the Palo Alto Hospital under the care of one of us (B. D.). That night he had a drenching night sweat, and severe night sweats persisted until the last week in June. The day after entry into the hospital severe "backache" recurred. The previous attack had been unaffected by breathing, but this time breathing and coughing exaggerated it, suggesting pleurisy. Suspicion having been aroused by "a few faint tinkles," a roentgenogram was obtained. It revealed multiple circumscribed areas of increased density. Sulfapyridine was given for five days. The temperature dropped but the development of nausea and a dermatitis necessitated the discontinuance of this therapy. When the fever recurred sulfanilamide was tried. The fever continued and the dermatitis returned, so the drug was stopped. Blood cultures, serologic tests, sputum examinations and cultures being persistently negative and coccidioidin tests being interpreted as equivocal, the patient was transferred to Stanford University Hospital in San Francisco on May 24. Sulfathiazole treatment was initiated (1 Gm. every four hours) but discontinued after three days and a total dosage of 47 Gm. because of increase in temperature

(to 103.6 F.), malaise, generalized arthralgia and dermatitis. Meanwhile, on May 26 the coccidioidin test with 0.1 mg. of coccidioidin became positive (12 by 12 mm.). *Coccidioides immitis* was recovered from stomach washings made the same day and repeatedly from sputum specimens obtained over a period of two weeks, the last successful attempt being on a specimen obtained June 11, more than a month after onset of the illness. Precipitin and complement fixation tests for *Coccidioides* were also positive. Roentgenograms and fluoroscopy on May 27 revealed a cavity in one of the consolidated areas. However, the defect rapidly closed. The blood count on May 28 showed 16,100 white blood cells with 68 per cent polymorphonuclear neutrophils, of which 36 per cent were banded cells, 8 per cent eosinophils, 2 per cent basophils, 21 per cent lymphocytes and 1 per cent monocytes. There were 4.91 million erythrocytes and 13.72 Gm. hemoglobin (80 per cent Sahli). The erythrocyte sedimentation rate was 26 mm. in sixty minutes (Cutler). After the sulfathiazole was discontinued his only complaints were fever, night sweats and cough. The cough gradually diminished during the early part of June and by June 21 had ceased entirely. At the same time night sweats stopped and by the end of the month his temperature remained normal all day. He returned home July 3 but was kept in bed until August 1. Then, since he had continued afebrile and his sedimentation index was only 7.5 mm. in sixty minutes (Cutler), he was gradually allowed up. He was permitted to return to Stanford in the latter part of September and carried his full research load without ill effect. Regression of the pulmonary densities as revealed by roentgenograms continues, though slowly, and no cavities are discernible. His sedimentation rate is consistently 1 mm. in one hour (Cutler's method).

CASE 2.—A. S., a female sophomore student aged 20, born in Germany, moved to Wisconsin in 1927 and to California in 1934. She remained in the region around San Francisco Bay and her only contact with the San Joaquin Valley was on two trips en route to other parts of the state.

On May 7, 1940, ten days after participating in the rattlesnake digging, she reported to the Women's Health Service with a complaint of backache radiating to the right side of the chest, relieved by infra-red light treatment. On May 8 she had fever and night sweats with some generalized aching. The third day, May 9, the backache and pain in the right side of the chest recurred with increased severity, and some discomfort was noted in the left side of the chest. These symptoms were accompanied by a nonproductive cough, anorexia and severe frontal headache. Taping reduced her discomfort slightly but infra-red treatment made it worse. Her temperature was 100.6 F. and she entered Palo Alto Hospital under the care of one of us (R. S.). There were no physical abnormalities, but roentgenograms of her chest on the day of entry revealed a rounded opacity in the parenchyma of the lung opposite the right hilus. The total white count was 20,550 with 86 per cent polymorphonuclear neutrophils, 9 per cent lymphocytes, 2 per cent monocytes, 3 per cent eosinophils (subsequently rising to 5 per cent; shown in table). The hemoglobin level was 80 per cent Sahli with 4,650,000 erythrocytes.

Sulfanilamide therapy was started the day of entry and 515 grains (34 Gm.) was given within the next ten days without appreciable effect. The pain in the chest cleared in two days but the anorexia, headache and dry cough persisted. On May 10 a rash resembling tinea corporis appeared on the buttocks but disappeared in two days after local application of tincture of iodine.

The temperature reached a maximum of 103 F. on May 10 and dropped thereafter. It persisted between 99 and 100 F. until June 1. On May 22 she was discharged from the hospital. Sputum cultures made while she was hospitalized yielded only a yeast. A coccidioidin skin test (0.1 mg.) was "faintly positive" on May 19. When repeated on May 29 the same test was strongly positive. Serologic tests on blood drawn June 1 and repeatedly thereafter indicated active coccidioidal infection. Although initial cultures were negative, *Coccidioides immitis* was recovered in the medical school public health laboratory by means of guinea pig inoculation of treated sputum collected June 6 and June 9. Anorexia persisted until June 1, and cough

and headaches lasted until June 18. Some weakness continued throughout the summer, but by September she felt quite well and had regained the 12 pounds (5.4 Kg.) that she had lost during her illness. Roentgenograms showed gradual clearing of the density. She remained well during the ensuing year.

CASE 3.—W. G., a male graduate student aged 24, was born in Ohio and lived there until he came to Stanford in October 1938. His only contact with the San Joaquin Valley was one trip along Highway 99 en route to Los Angeles.

On May 10, 1940, thirteen days after participating in the rattlesnake digging, he began to cough, lost his appetite, felt feverish and complained of a frontal headache and a sense of oppression in his chest without actual pain. A "tightness" in his chest remained for only thirty-six hours and malaise was mild and also transient. An occasional nonproductive cough persisted until June 13. The headache continued for only three days. Continued anorexia caused him to lose 6 pounds (2.7 Kg.). During the latter part of the first week of his illness nightsweats were so severe as to dampen his pajamas. The duration of the fever was unknown, but it must have been for at least one week. On May 20 he was called in by the Men's Health Service for a check-up which was being made of all members of the expedition. His temperature was found to be 100 F., so he was sent to the hospital for roentgen and laboratory examinations. The roentgenograms showed an increase in lung root density but no definite areas of infiltration. After three weeks of illness, he noted a considerable chilliness on arising but had no real chills at any time. There was no backache, sore throat or nervousness other than pruritus. Instead of having insomnia, he was tired and slept about sixteen hours a day for the first three days of the attack. On June 5 his appetite was well on the way back but was still not normal. Outside of occasional cough and extreme fatigue no other symptoms were present. A coccidioidin test with 0.1 mg. of coccidioidin on June 4 measured 30 by 30 mm. By the time he was asked to collect his sputum on May 30 scarcely any could be raised. *Coccidioides immitis* was not recovered. However, his sedimentation index of 20 mm. (Cutler) and his blood count were supporting evidence, as shown in the table. Serologic reactions of his blood, both positive complement fixation and heavy precipitins, were characteristic of primary coccidioidal infection. He rapidly regained his strength. By June 23 he felt fine and remained well during the ensuing year.

CASE 4.—B. M., a female senior student aged 22, was born in Washington and came to California as a Stanford freshman in October 1936. Her only contact with the San Joaquin Valley was on occasional trips to Yosemite and Los Angeles. Only once while on such a trip did she stop overnight in the valley.

On May 11, fourteen days after the rattlesnake excavating and while in Sacramento en route to Lake Tahoe, she had a sudden onset of chills, then felt hot and completely lost her appetite, all of which she attributed to the heat. These symptoms continued and when she reached Tahoe she was short of breath, a condition she attributed to the altitude. The following day she began to ache all over and had a severe frontal headache. The fever and anorexia continued, and in addition she had diarrhea, vomiting and vertigo. Returning to Stanford on May 13 with severe backache, a temperature of 102 F. and a cough, her condition was diagnosed as possible measles and she was sent to the Palo Alto Hospital. Physical examination was entirely negative except for the elevated temperature and a generalized ("somewhat urticarial" according to her attending physician) eruption on her legs and thighs, with a few lesions on her back. The lesions itched and were diagnosed hives. They lasted four to five days and recurred once again on May 25. The malaise became worse and she noted tightness throughout the chest. It was not actually pleurisy but it caused her to have shortness of breath. She remained in the hospital five days and then, with the cough diminished and fever ended, she was discharged. However, the malaise, insomnia, loss of appetite and headache continued, as did the nonproductive cough. Small blisters appeared on the palms of her hands May 17 and remained for three days, after which the skin peeled. The appetite began to return after

two weeks, the weight loss having been at least 5 pounds (2.3 Kg.). Headaches stopped May 25. When interviewed June 5, she still had this sense of oppression in the chest, considerable dyspnea, periods of backache and a dry cough. She tired readily and did not have her customary energy. A coccidioidin test with 0.1 mg. of coccidioidin performed May 24 measured 50 by 90 mm. By the time she was asked to collect her sputum, May 30, scarcely any could be raised. *Coccidioides immitis* was not recovered. However, her sedimentation index of 23 mm. (Cutler) and her blood count were supporting evidence. Roentgenograms taken May 24 showed two areas of density beyond the left lung root and at the left base. These findings assume even more significance in view of the considerable clearing by June 12 and complete clearing by August. Serologic reactions of her blood, both positive complement fixation and heavy precipitins, were characteristic of primary coccidioidal infection.

The cough continued until June 12. When seen June 21 she stated that only in the last two or three days had her appetite been good. She still tired easily and became short of breath but otherwise felt all right, though not as full of "pep" as usual.

During the summer she was very quiet. Her roentgenograms cleared (as previously noted) and the lost weight was regained by August. By September 30 she felt fully recovered. She carried a heavy schedule during the year and felt entirely well.

CASE 5.—D. S., a female junior student aged 20, was born in San Mateo, Calif. She resided there two years, then went to Sacramento for nine years and lived continuously in Berkeley thereafter (nine years) until she started to Stanford in October 1937. She was in the San Joaquin Valley in 1937 en route to Death Valley and once took a field trip to Yosemite by way of Los Banos.

On May 10, 1940, thirteen days after the rattlesnake episode, she had an abrupt onset of pain in the neck and anterior part of the chest, cough, loss of appetite and generalized aching. She also felt feverish. The fever and aching persisted for three days and on the third (final) day she went to the Women's Health Service, where she was diagnosed as having myositis. The pleurisy was fairly severe, first on the right side and then beneath the breast bone, and remained for one week. It then disappeared and recurred twice, the last time being May 26. Both recurrences were for only a couple of days with generalized pain. The severe pain in the neck also lasted approximately one week. The cough, accentuating the pain in the chest, was persistent and produced little sputum. After three weeks it gradually abated and at the same time her appetite began to improve. No loss of weight was detected. The patient had severe nightsweats on the night of May 12 but noted them only on that occasion. Her headache, which began the day after onset of her condition, was located on the right side of the head and continued throughout the summer. The only cutaneous lesions that developed were hives, which appeared over the buttocks at the outset and which recurred June 4. These cutaneous lesions itched and were not at all like erythema nodosum.

A coccidioidin test (0.1 mg.) performed May 24 was equivocal. Repeated June 4, it was definitely positive (10 by 10 mm.). *Coccidioides immitis* was recovered at the medical school by culture of sputum collected May 30. Roentgenograms, taken on May 24, showed heavy lung root markings with density spreading into the right upper lobe. By June 12 there was considerable clearing of this density, and a roentgenogram taken October 9 showed complete clearing except for a suggestion of lung root enlargement on the right. Her serologic tests were also characteristic of primary coccidioidal infection.

During the forepart of the summer she improved rapidly, but in the latter part of August there were three nights in which there were nightsweats. She tired readily but by the latter part of September, when the university reopened, felt quite well, having gained 12 pounds (5.4 Kg.). However, during the autumn quarter she studied hard and found that she lacked her former strength. She lost 22 pounds (10 Kg.) during this period. She had a mild attack of "flu" in December with a normal recovery. A year after her illness she felt entirely well.

CASE 6.—R. R., a female sophomore student aged 19, was born in Oklahoma. She never lived in Texas or Arizona but once stayed two weeks in Santa Fe, N. M. She first came to California when she entered Stanford in September 1939. At no time had she been in the San Joaquin Valley.

On May 6, 1940, nine days after witnessing the rattlesnake digging, the patient felt feverish, ached all over, had a severe headache and backache, pain in the left side of her neck and left side of the chest, completely lost her appetite, was nauseated and vomited three times. That night she had the first of a month long series of nightsweats. The symptoms did not abate but grew worse, and after two days (May 8) the pain in the back and chest was so severe that she reported to the Women's Health Service. Physical examination failed to disclose any positive conditions. She had been swimming the day prior to the onset and her condition was diagnosed as strained muscles from diving. She was given heat treatment and was taped. The taping partially relieved the chest pain, which was accentuated by breathing, but the heat only increased the discomfort. A slight nonproductive cough which began on May 7 became much more severe on May 11, but its persistence was matched by the scantiness of the sputum. A small cutaneous lesion which appeared on her chin May 9 was diagnosed as either impetigo or poison oak and cleared after nine days. Insomnia was another feature of the illness. After eight or nine days the pleurisy and backache diminished but the other symptoms persisted for three weeks during which time the patient lost 9 pounds (4.1 Kg.). On June 1 she still had an evening temperature of 100 F., but it then abated along with her malaise and anorexia. The cough and headaches persisted for another week.

On May 30, 0.1 mg. of coccidioidin intracutaneously produced a reaction measuring 60 by 80 mm. with vesiculation of 10 by 10 mm. From sputum obtained May 30 and examined at the medical school, *Coccidioides immitis* was recovered both by cultures and by animal inoculation. Roentgenograms taken May 27 showed an area of patchy density near the periphery in the right costophrenic angle and a similar area of homogeneous density under the second right anterior interspace. These densities had cleared only slightly by October 9. The accelerated sedimentation index (14 mm. Cutler) and 10 per cent eosinophils were typical conditions and the serologic reaction was characteristic of primary coccidioidal infection.

She was exhausted by slight exertion until the middle of June (five weeks after the onset). During the forepart of the summer her strength gradually returned, but in the middle of August she began coughing and the left base of her chest hurt for six days. Then the pain gradually departed and by the middle of September she felt fairly well except for frequent headaches. In the autumn quarter she grew steadily more tired and her geology field trips exhausted her. In December she had an attack of influenza and during the rest of the school year continued to feel below par. However, her sedimentation index remained normal (under 5 mm. Cutler) and her precipitin and complement fixation tests for *Coccidioides* became negative and remained so, indicating that the infection was quiescent.

CASE 7.—J. B., a female senior student aged 21, was born in Huntington Park, Calif. She had lived there all her life with the exception of four school terms at Stanford beginning in October 1936. There was no history of residence in the San Joaquin Valley but of occasional trips through the valley on Highway 99. Usually she traveled along the coast on Highway 101.

There was no illness after the return from the field trip except a slight cough with an indefinite date of onset (around May 20) and subsequent to a hayride. After the onset of the cough, she also had headache. However, there was not present loss of appetite or of weight, or generalized aching, fever, pleurisy, nervousness or insomnia. During the entire spring quarter she did not feel her customary "pep," but there had been no significant drop after the San Benito County trip.

A coccidioidin test (0.1 mg.) performed May 30, 1940 was strongly positive, measuring 60 by 80 mm. Although her slight cough was nonproductive, sputum was collected June 9 and June 14, but *Coccidioides immitis* was not recovered. A

roentgenogram taken May 27, however, showed a peribronchial density at the right base, which had disappeared by August 21. Moreover, an accelerated sedimentation index (13 mm. Cutler) and 6 per cent eosinophils were additional corroboration of coccidioidomycosis. Finally, her serologic reaction was characteristic of primary coccidioidal infection.

SUMMARY

Seven out of 14 university students and faculty members were infected with *Coccidioides immitis* on a field trip to a region adjacent to the San Joaquin Valley. All 7 and 2 of the others who apparently had been immunized by previous infection were subjected to a heavy dust exposure. The fungus was recovered from the soil which had been the source of the dust.

The infections of 6 of the 7 victims were accompanied by moderately severe symptoms which lasted from three to six weeks, but all patients recovered without the development of coccidioidal granuloma.

A SURVEY OF COCCIDIOIDOMYCOSIS AT CAMP ROBERTS, CALIFORNIA

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CAMP ROBERTS, CALIFORNIA

In the early months of the development of Camp Roberts, among the many cases of acute respiratory illness receiving treatment at the Station Hospital, 2 cases of primary coccidioidomycosis were discovered. Camp Roberts lies on the western slope of the Coast Range Mountains of California, separated from the San Joaquin Valley by that range, and since this area had not previously been known to harbor the disease as an endemic focus a survey was undertaken to determine the extent of the disease locally, the results of which survey constitute the body of this report.

INTRODUCTION AND HISTORICAL DATA

Dr. Emmet Rixford of San Francisco reported in 1894¹ a case of malignant ulcer of the skin caused by an agent which he and Gilchrist² named *Coccidioides*. This was the first report of this disease entity in the American literature, though the same disease had apparently been described in 1892 by Posada in Argentina. The infecting agent was a tiny spherule which multiplied by endosporulation and was capable of producing an ulcer if rubbed into the abraded skin of a dog; it was named *Coccidioides* because of its resemblance to *Coccidia* of animals. At first thought to be a protozoan, it was reported in 1900 by Ophuls and Moffitt³ to be a fungus, readily cultured on various mediums. The disease coccidioidal granuloma proved to be a serious disorder, involving not only the skin but also many of the other viscera and leading to a fatal outcome in 50 per cent of the cases.⁴

By 1936 450 cases of coccidioidal granuloma had been reported in California, constituting the majority of all the cases on this continent. A striking feature was that most of the patients had lived a longer or shorter period of their lives in the San Joaquin Valley of California. The disease had been discovered in animals, as well as

1. Rixford, Emmet: A Case of Protozoic Dermatitis. *Occident's M. Times* 8: 704-707 (Dec.) 1894.
2. Rixford, Emmet, and Gilchrist, T. C.: Two Cases of Protozoan (Coccidioidal) Infection of the Skin and Other Organs. *Johns Hopkins Hosp. Rep.* 1: 209-268, 1896.
3. Ophuls, Wilhelm, and Moffitt, H. C.: A New Pathogenic Mould. *Philadelphia M. J.* 5: 1471-1472 (June 30) 1900.
4. Beck, M. D.: Coccidioidal Granuloma. *California State Department of Public Health Bulletin* 57, June 1931.

in man, and pathologic investigation showed that the probable port of entry in most cases was the respiratory tract, with involvement of tracheobronchial and mediastinal lymph nodes, much the same as in tuberculosis. In fact, the mimicry of tuberculosis was striking in all phases and progress of the disease.

An important further step in the understanding of the infection was made by Gifford⁵ and Dickson⁶ during the period 1936-1937, when they proved that *Coccidioides* was the cause of a syndrome known colloquially in the San Joaquin Valley of California as "Valley fever" or "San Joaquin fever." This syndrome, previously well known but not understood, was characterized by the development of erythema nodosum and attendant systemic symptoms much like those of influenza. *Coccidioides* was cultured from the sputum of many patients and all were found to react positively to a cutaneous test with coccidioidin, a substance closely analogous to tuberculin. It was determined that "valley fever" was associated with the initial infection with *Coccidioides* and is the analogue of "childhood" tuberculosis. The name "primary coccidioidomycosis" was given to this symptom complex by Dickson.

Since then it has become clear that a majority of the residents of the San Joaquin Valley eventually become infected (70 to 80 per cent give positive reactions to the coccidioidin skin test after ten years' residence); that 2 to 5 per cent of those infected have the erythema nodosum syndrome known as valley fever,⁷ whereas the remaining 95 to 98 per cent may be entirely asymptomatic but generally have respiratory symptoms frequently confused with influenza; that the granuloma or secondary stage (like "adult" tuberculosis) is, fortunately, quite rare, and that the San Joaquin Valley is not the only endemic focus but shares its stigma with parts of Arizona and Texas. Argentina and possibly even Italy and other continental areas had been implicated previously. Exactly what percentage of those exposed develop skin sensitivity to coccidioidin or manifest the symptoms of primary coccidioidomycosis is not known. Nor is there any exact information as to the reservoir from which the fungus comes to enter the human being, but it is presumed from the high correlation of frequency of new cases with dryness of the atmosphere that the soil harbors the fungus and gives it up as dust that may be inhaled. There is no information as to what percentage of those infected eventually have the dread granuloma, but its infrequency can be seen by the fact that while a large percentage of the population of the San Joaquin Valley (estimated population 750,000) is apparently infected with *Coccidioides* (sensitive to the coccidioidin skin test), the Department of Public Health of the State of California⁸ reports an average annual incidence of only 46 new cases of coccidioidal granuloma. Susceptibility to the development of the granuloma is relatively high among the dark skinned races, and it is of note that cases of the granuloma show a much lower degree of skin sensitivity to coccidioidin than do those who have recovered from the initial infection without apparent residual disease.

MATERIAL AND TECHNIC

This report is based chiefly on the results of two skin test surveys made three months apart, the two surveys being made on the same group of persons, with a view to finding in how many instances the test became positive during the three month interval. In addition, there are reports of 3 cases discovered in the hospital—not a part of the survey.

Coccidioidin supplied by Dr. C. E. Smith of Stanford University School of Medicine was diluted with saline solution to a concentration of 1:1,000. While it is conceivable that 1:100 dilution would show sensitivity occasionally where 1:1,000 would give a negative or questionable response, it has been found that for practical purposes 1:1,000 is sufficient. The same bottle of undiluted coccidioidin was used as the source in the two series of tests, being kept during the interval in a refrigerator.

It cannot be said that a precisely constant amount of the antigen was injected in each patient. The necessity of doing the procedure with minimum delay required a special "mass attack" technic, and the amount of fluid lost in the hub of the needle and in expelling air bubbles prevented accurate measurement. The amount injected was determined by gross inspection of the wheal produced and averaged 0.05 cc. In no case was it more than 0.10 cc. nor less than 0.03 cc. It is my observation that the variation in amount, within the limits men-

TABLE 1.—Results of Coccidioidin Skin Tests

	Number
First test, June 21, 1941	
Men tested	888
Positive	11
Second test, Sept. 13, 1941	
Men tested (less positives from first test)	776
New positives	14

tioned, is not significant except perhaps in distinguishing slight variations in the grade of the reaction. In other words, the positive reactors will appear in response to 0.03 cc. as surely as to 0.10 cc. but may be graded "one plus" with the former and "two plus" with the latter.

The two series of tests were made on a battalion of men plus a few men from three other battalions newly arrived at Camp Roberts. The first test series was done June 21 on a battalion of troops that had arrived between June 12 and June 15. The troops were gathered from the Middle West—Illinois, Missouri, Nebraska, Arkansas and Texas—and no attempt was made to list them by residence except for those who reacted positively to the first test.

The second series of tests was made on the same men on September 13 after three months of training in and about Camp Roberts and just before their transfer to other camps.

All reactions were read at from forty-four to forty-eight hours and were recorded thus:

± definite induration and erythema but less than 1 cm. in diameter.

+ induration of 1 cm. in diameter.

+ + induration of 1 cm. in diameter plus flare of erythema of 1 cm. or more.

+ + + induration of 2 cm. or more.

+ + + + vesiculation

Those reacting positively to the second test who were previously demonstrated to be nonreactors were questioned regarding symptoms during the three month

⁵ Gifford, M. A. San Joaquin Fever, Annual Report of Kern County Health Department for the Fiscal Year July 1, 1935 to June 30, 1936, pp. 22-23.

⁶ Dickson, E. C. Valley Fever, California & West Med. 47: 151-155 (Sept.) 1947. Dickson, E. C., and Gifford, Myrtle Ada. Coccidioides Infection (Coccidioidomycosis), Arch. Int. Med. 62: 853-871 (Nov.) 1938. Dickson, E. C.: Primary Coccidioidomycosis, Am. Rev. Tuberc. 38: 722-729 (Dec.) 1938. Coccidioidomycosis, J. A. M. A. 111: 1162-1164 (Oct. 8) 1938.

⁷ Smith, C. E. Epidemiology of Valley Fever, Erythema Nodosum, Am. J. Pub. Health 37: 111-114 (1947).

⁸ Report of Bureau of Epidemiology, State of California.

interval, and roentgenograms of the chest were made. All were carefully questioned regarding visits to other localities during this time.

In some cases, specimens of the blood were sent to the Department of Public Health and Preventive Medicine of the Stanford University School of Medicine in San Francisco for serologic tests. Under the supervision of Dr. C. E. Smith the specimens were examined for the presence of precipitins and for complement fixation according to technics described elsewhere. In 1 case, sputum was forwarded to Smith for culture and animal inoculation, since the final determination of the nature of the fungus depends on its ability to produce the typical reaction in animals.

The author wishes to express appreciation for the invaluable aid given by Dr. Smith and also by Lieut. Col. William Levin of the Sanitary Corps, Lieut. Col. Warfield W. Lewis of the infantry, Private Dernbach and others. Each of these rendered service without which this work would have been entirely impossible of achievement.

RESULTS OF SURVEY

The first series of tests was accomplished on 888 men. Eleven were found to give a positive reaction, though they had been at Camp Roberts too short a time to have picked up the disease here (tables 1 and 2). Of these positive reactors, 1 had lived only in Montana and Idaho, 1 had lived only in Arkansas not far from Texas, 6 had lived in Texas and 3 had lived in the San Joaquin Valley of California. Texas and California are already well recognized endemic foci of the disease, and the reaction in the first case suggests the possibility that Montana or Idaho may harbor the disease.

The second series included only 736 of the 877 who gave a negative reaction to the first test, because many of the men were not available, being on leave or having been transferred. Actually, of the 11 found positive in the first test, 8 were retested and all reacted positively the second time. Of the 736 men in the second series, all negative to the first test, 14 gave positive reactions. In other words, 14 men proved to be nonreactors in June reacted positively in September. Three of these had visited in the San Joaquin Valley during their stay at Camp Roberts, 7 had been to Los Angeles or San

TABLE 2.—Previous Residence of Men Found Positive to Coccidioidin on Arrival at Camp Roberts

Case	Reaction	Past Residence in Known Endemic Areas
C. M.	+	Bakersfield (San Joaquin Valley)
S. D.	++	Fresno (San Joaquin Valley)
R. S.	++++	Exeter (San Joaquin Valley)
I. C.	++	Texas
J. N.	+++	Texas
L. G.	±	Texas
R. R.	+++	Texas
R. M.	+	Texas
K. C.	±	Texas
J. R.	++	Arkansas only
C. B.	++	Idaho and Montana only

Francisco and 4 had not left the vicinity of Camp Roberts more than a few miles, having gone to Salinas (1 case), Pismo Beach (1 case) and Paso Robles (2 cases) (table 3).

Of the 14 positive reactors, only 1, according to a check in the hospital records and answers to a questionnaire, had entered the hospital for any febrile or respiratory illness, though hospitalization is the routine procedure for any illness severe enough to prevent exercise of full duty. It is obvious that the onset of the

infection was not attended by the development of distressing symptoms in most of the cases.

All but 4 of the 14 felt that they had at one time or another during the three months had a bad cold or influenza, and 3 had noticed a cutaneous eruption—nonitching red spots that looked like the positive reac-

TABLE 3.—Trips to Other Localities Made by Men Developing Positive Reaction While at Camp Roberts

	No. of Cases
Visit to San Joaquin Valley.	3
Visit to Los Angeles.	4
Visit to San Francisco.	3
No farther than Salinas.	1
No farther than Pismo.	1
No farther than Paso.	1
No farther than San M.	1

tions to the skin test. None of these eruptions had been examined by medical officers, so their description had to be a yes or no response to a questionnaire which was sent to all positive reactors (see table 4).

Roentgenograms of the chest made September 16 on the 14 new reactors showed 1 case of pulmonary infiltration, a small area of light, uniform density much like the pulmonary manifestations in "childhood tuberculosis," and 2 cases with moderate enlargement of hilar lymph nodes. Check-up films of the 14 cases found on survey have not yet been made, and the results will be reported later.

REPORT OF CASES

Although many patients with primary coccidioidomycosis are entirely asymptomatic and must be searched out with the aid of a skin test survey, a few are ill, with symptoms like influenza or a bad chest cold. It was one such typical case that called our attention to the presence of Coccidioides in this location. The clinical summary is presented herewith:

CASE 1—H. D. S., a white man aged 23, entered the hospital April 29, 1941 complaining of a cold and cough for three days, headache for two days and chills and fever for one day. Except for a temperature of 38.2 C (100.8 F.), there was no abnormality apparent. The second day, the temperature went to 39.2 C. (102.6 F.) and the cough was worse, but three days later the fever was gone, the patient felt well and he was returned to duty. Five days later, May 8, he reentered the hospital because of pain in the right side of the chest of three days' duration and persistence of the cough. The temperature was 37.9 C. (100.2 F.) and there were rales at the right apex. The fever, cough and chest pain subsided a little but were still present after five days, at which time the white blood cell count was 12,300, with 50 per cent neutrophils, 32 per cent lymphocytes and monocytes, 12 per cent eosinophils, and 6 per cent basophils. The possibility of the trouble being tuberculous was considered and a roentgenogram of the chest was made, showing a fanlike area of increased density extending from the hilus to the right apex. In order to clarify the situation, a skin test with tuberculin was made and a coccidioidin test was done at the same time. After forty-eight hours, the tuberculin test was negative, and there was a definitely positive reaction to the coccidioidin (1 cm. by 1.5 cm. induration and erythema). The most startling development was the appearance at this time of erythema nodosum, a crop of red indurated spots on the legs, which had actually started two days previously and subsided gradually in a period of five days. The blood count was repeated, showing 10 per cent eosinophils, and a specimen of blood drawn June 7 was sent to Dr. C. E. Smith, who reported strong reactions to precipitin and complement fixation tests, "findings characteristic of moderately severe primary infection due to Coccidioides immitis." Clinically there was gradual improvement, a roentgenogram on June 6 showed almost complete resolution of the lesion previ-

ously noted and after a month of hospitalization and symptomatic therapy the patient was again returned to duty. No sputum culture was made. This man had lived in Nebraska prior to induction into the Army and had not been more than a few miles away from camp after his arrival here.

Another summary is presented to illustrate the severity of the symptoms in an occasional case and the difficulty in arriving at the proper diagnosis:

CASE 2.—E. R., a white man aged 24, entered the hospital Sept. 2, 1941 because of severe pain in the back which had appeared suddenly two hours previously while the patient was sitting at a table. For a few minutes he could hardly move, the pain was so severe, and he lost no time in getting to the hospital by taxicab. The pain was located in the lumbar region and was aggravated by respiratory movement or bending of the trunk. On entry there was evident pain and guarding of the muscles of the back, with impairment of the movements of respiration and bending of the trunk. There was no fever, the pulse rate was 88 and the blood pressure was 124 systolic and 80 diastolic. He was given sedatives and the clinical impression was that he suffered from an acute myositis secondary to chronic prostatitis. On the fourth day the temperature rose to 37.8 C. (100 F.), though the pain in the back had practically disappeared. Two days later the temperature was 38.3 C. (101 F.) and consultation was requested. In the next five days the temperature went gradually up to 40.7 C. (105.2 F.), with no symptoms except those of fever, and the patient was seen by eight different physicians, with diagnoses of pleurisy, pulmonary tuberculosis, pulmonary infarct, prostatitis, perforating ulcer of the duodenum, dissecting aneurysm, renal stone, bronchopneumonia, malaria, mediastinitis, undulant fever, typhoid, pyelitis and perinephric abscess. During this time he underwent lumbar puncture (the spinal fluid was normal) and catheterization (the urine was sterile); he was examined roentgenographically four times (no abnormal findings) and the following laboratory procedures were done: an electrocardiogram was made, a culture of the urine was taken, six routine urinalyses were made, six routine blood counts were made, the sputum was examined, a blood smear was examined for malaria, agglutination tests were done for evidence of undulant fever and for the typhoid-paratyphoid group and a stool culture was made. The red blood cells numbered 4,000,000 to 4,500,000 per cubic millimeter, the white blood cells 6,600 to 11,200 with from 56 to 80 per cent polymorpho-

was recovered, proved by culture and animal inoculation. The patient made a complete symptomatic recovery and was discharged from the hospital three weeks after entry. It is noteworthy that he did not manifest erythema nodosum at any time. He had spent all his life in Alabama, had never been out of the state prior to induction into the Army and since coming to Camp Roberts had made one trip to San Francisco, none to the San Joaquin Valley.

One patient was seen in the hospital as presenting a dermatologic problem:

CASE 3.—E. O., a white man aged 22, entered the hospital May 26, 1941 because of red spots on his legs of two days' duration. The eruption was somewhat tender and caused his legs to feel swollen. He had been in the hospital two weeks previously for pain in the chest, aggravated by breathing deeply, associated with a fever of 38.3 C. (101 F.), and had been released after one week, at which time he was afebrile and asymptomatic. The cutaneous lesion was typical erythema nodosum and the probability that it was a manifestation of coccidioidomycosis was considered. A roentgenogram of the chest showed a small patch of infiltration in the base of the right lung, and there was eosinophilia (18 per cent). The eosinophils two days later were recorded as 13 per cent. A coccidioidin skin test with the usual 1:1,000 dilution gave a very weak response, and the test was repeated with 1:100 dilution, giving a strongly positive reaction. This weak response to the coccidioidin is very unusual, since patients with erythema nodosum are notorious in the vigor of the sensitivity of their skin. Serologic reactions on the patient's blood, done by Dr. Smith, were strongly positive.

The erythema nodosum cleared in ten days, leaving only a brownish discoloration. The chest symptoms were of no concern, and the patient returned to duty. He had lived in Minnesota all his life prior to coming to Camp Roberts and after his arrival here had been no farther away than San Luis Obispo.

COMMENT

The chief significance of the investigation here reported is the demonstration of the fact that coccidioidomycosis can be acquired in the environs of Camp Roberts, California, a hitherto unknown endemic focus. This fact has been proved by the finding of 14 persons who were known to have given negative reactions to the coccidioidin skin test on arrival here and positive reactions three months later. It might be said in criticism of this statement that (1) the positive skin test is not specific but may have developed in response to some factor other than the exposure to *Coccidioides*, (2) the proved exposure may have taken place before arrival at camp, as while traveling across the country, (3) the proved exposure may have been acquired after arrival here but while visiting in some nearby area such as the San Joaquin Valley. In refutation of these criticisms it must be pointed out (1) that the skin test has apparently been proved to be quite specific, as determined by its use over a period of years, (2) that, while it must be admitted that some of the men may have been exposed to the disease en route to Camp Roberts the possibility of this is slight and (3) that careful questioning regarding trips to other localities after arrival here demonstrates that in at least some of the cases the exposure must have been here. Three of the 14 had visited in the San Joaquin Valley, 7 had been to Los Angeles or San Francisco but had not been in the San Joaquin Valley and 4 had not left the vicinity of Camp Roberts more than a few miles, the actual far points being Salinas, Pismo Beach, Paso Robles and San Miguel.

By extrapolation, if it is assumed that the percentage of men found infected is uniform throughout the camp, it could be estimated that, of the 20,000 to 25,000 men here, from 400 to 500 acquired primary coccidioido-

TABLE 4.—Responses of "New Positive Reactors" to Questionnaire

Case	Reaction of Skin Test	Hospitalized While at Camp Roberts	Had Cold While at Camp Roberts	Red Skin Eruption Like Test	Results of Chest Roentgenograms Made Sept. 16, 1941
S. R.	+	No	Yes	Yes	Normal
J. F.	+	Yes	Yes	No	Normal
J. H.	++	Yes	Yes	No	Normal
W. J.	++	No	Yes	Yes	Hilar enlargement
H. K.	+	No	No	No	Hilar enlargement
W. M.	+	No	Yes	No	Normal
G. H.	++	No	Yes	No	Normal
J. M.	++	Yes	Yes	No	Normal
H. N.	+	No	No	No	Normal
I. W.	+	No	Yes	No	Normal
D. W.	+	No	No	Yes	Normal
W. W.	+	No	Yes	No	Normal
H. E.	++++	No	No	No	Pulmonary infiltration
F. L.	+	No	Yes	No	Normal

nuclear neutrophils and as much as 16 per cent eosinophils. All other tests were negative. On September 15, two weeks after entry, the clinical impression was that the disease was most likely tuberculosis of the pleura and hilar lymph nodes but possibly coccidioidomycosis, and a coccidioidin skin test was done. The reaction was brisk and violent, with vesiculation of the skin. Blood was drawn and sputum was collected for examination at Stanford, with a report of unusually strong and rapid precipitin reaction and positive complement fixation in the serum "characteristic of active coccidioidomycosis being well handled." From the sputum viable *Coccidioides immitis*

mycosis between June and September of this year. Observations elsewhere indicate that the incidence of new cases is highest in the dry months, falling to almost nothing in the wet winter months, so that the number of cases developing in three months of the summer represents nearly half of the annual incidence.

One feature of interest is the sporadic nature of the infection. The men tested in the two series were grouped almost equally into four companies, but the new positives were all in two of the companies, the other two companies being entirely free of new cases. Three of the new positives were White, Whitfield and Wilson, alphabetically contiguous on the company roster and presumably together on many bivouacs and maneuvers. It is possible that all were infected by the same gust of wind, carrying dust from a particularly heavy growth of the fungus.

Of the 14 men with proved new coccidioidomycosis, only 1 had entered the hospital for a respiratory or febrile illness. Two others had been hospitalized, one for a head injury and one for flat feet. There is no provision at Camp Roberts for resting off duty. If a soldier is not feeling fit for strenuous duty he enters the hospital. It is therefore obvious that the morbidity associated with the onset of coccidioidomycosis is almost insignificant in most cases. Some of the patients, however, suffered illness sufficient to incapacitate for military duty. In fact, the discovery of the presence of coccidioidomycosis at Camp Roberts depended on the typical symptoms occurring in one of the early patients.

When symptoms do occur in association with the onset of the disease, they may be of great diversity. Apparently there may be any combination of the various "typical" stigmas, and any grade of severity may exist. The symptoms considered characteristic include malaise, weakness, fever, chills, chest pain, cough and dyspnea, and the common manifestations include erythema nodosum, erythema multiforme, pulmonary rales, roentgen evidence of pulmonary or mediastinal lymph node disease and eosinophilia. Of course, a positive coccidioidin skin test may be presumed to exist in all new cases after the first five to fifteen days. The presence of a positive skin test, however, does not necessarily indicate a recent or active stage of the disease.⁷ Like the reaction to tuberculin, the skin test is positive for many years after the primary infection, presumably for life. Serologic evidence of the disease, in the nature of a precipitin reaction or a complement fixation, is present in the vast majority of cases; at least, in all our cases in which the tests were made they were found positive. The sputum yields the fungus itself in approximately 50 per cent of cases of erythema nodosum of coccidioidai etiology, according to other investigators.⁷ Detection of the fungus requires culture of the sputum and inoculation of guinea pigs or mice with any suspicious growth, because direct microscopic examination of sputum or colonies from primary culture does not provide any sure differentiation from other fungi. While the final proof of the diagnosis depends, of course, on the recovery of the etiologic agent, for practical purposes diagnostic error is minimal if the skin test, eosinophilia, pulmonary signs and symptoms and skin manifestations are typical.

SUMMARY

1. Several cases of primary coccidioidomycosis developed in the vicinity of Camp Roberts, California, a hitherto unknown endemic focus of the disease.

2. Of 736 soldiers who came from other parts of the United States to Camp Roberts, 14 became infected during three months' residence here, from June to September.

3. The morbidity associated with the onset of infection is almost negligible in most cases.

4. Rarely a patient becomes quite ill at the onset of the disease, with more or less fever, cough, pain, cutaneous eruption and pulmonary infiltration.

OBSTETRICS IN WARTIME

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HONOLULU, HAWAII

On Sunday morning Dec. 7, 1941, out of literally a clear sky, Honolulu and its environs suddenly suffered a severe bombing. The details of the damage done, the number of civilian and military casualties and the military aspects of the problem are not the purpose or province of this paper. The sudden violence of this catastrophe did awaken the world to the possibility that a similar event might happen almost anywhere else.

Much will be written and much will be said regarding the care of casuals, emergency aid stations, police and fire protection and a number of other phases of community activity under similar circumstances: the specific problem of this paper is to consider obstetric management under crisis conditions. It is probable that this problem is just as real as the aforementioned problems; it is also probable that this problem as it existed in Honolulu would be paralleled in any other community. The experiences of this community are therefore delineated here in the hopes that they may be of help and guidance to other communities in making plans for war time conditions or a possible sudden catastrophe.

PEACE TIME SETUP

Hawaii is a group of islands and therefore a scattered community with problems of transportation much greater than in most mainland communities. Honolulu is the only metropolitan area with a population of 200,000; the rest can be accepted as essentially rural with highly organized plantations making up the bulk of the latter. The 400,000 odd population gives birth to about 10,000 babies yearly; this is a very mixed population, nearly half being Orientals. Oahu is not the largest island, but it contains the bulk of the population and nearly all the military activities, personnel and defense equipment; it was this island which was the target for the Japanese attack.

Numerous factors contributed to a very poor obstetric record in this community until about a decade ago. At that time the outstanding facts showed, briefly, that:

Almost 50 per cent of deliveries were unattended.

Only 25 per cent were hospital deliveries.

Less than one third of deliveries were by physicians.

Maternal mortality rates ranged around 9 per thousand live births.

Infant death rates were around 90; they had previously been consistently over 200 in some communities.

Nobody had any control over midwives, and there was no one to question their qualifications or abilities.

There was no regulation of hospitals accepting maternity cases.

Almost every physician was doing some obstetrics, and there was no one to question his methods or end results.

Antepartum care was the exception rather than the rule.

The advent of a maternal and child health program under the board of health proved very useful as a state agency in effecting improvements, and about it could be built a sane and practical program of maternal welfare. With an obstetrician and a pediatrician at the head of such a bureau, many accomplishments were recorded which tended materially to change the obstetric complexion. In contrast with the conditions of ten years ago, the following briefly shows the present status:

About 80 per cent of deliveries occur in hospitals.

More than 80 per cent of deliveries are attended by a physician.

The maternal mortality rate is 1.9 per thousand.

The infant death rate is around 40.

Less than 10 per cent of deliveries are unattended.

Midwives are under strict control by the board of health; there are fewer midwives, and midwife deliveries are decreasing in number.

There are forty antepartum clinics, carefully supervised, offering services even to remote communities.

Antepartum care is the rule rather than the exception.

An educational program has taught the expectant mother to demand hospital deliveries by a physician.

All hospitals accepting maternity cases are inspected yearly. They have been compelled to come up to minimum standards of equipment and service (separate nurseries, incubators, delivery rooms, isolation facilities, 75 square feet per adult bed, and so on).

Obstetric consultation services are offered by qualified obstetricians.

Each maternal death is carefully investigated.

Refresher courses in obstetrics and other teaching methods have awakened the general practitioner to his responsibilities in his obstetric practices, with noticeable improvement.

With this record of achievement, it is logical that the state agency should be in a key position to make plans for a major disaster and to help execute such plans when catastrophe arrives. Any community now making similar plans might do well to consult its own state agency, because it is in the best position to have a broad perspective of the community problems.

DISASTER PLANS

Honolulu had realized its precarious position and had probably gone further in perfecting major disaster plans than most similar mainland communities. With "M-Day" funds set up through legislation and headed by a major disaster council, months of planning and training found Honolulu with plans which came in handy when catastrophe overtook us suddenly. Of all the civilian groups, the medical fraternity was probably best prepared. This is proved by the facts that within about an hour's time after bombing began the following medical activities were in evidence:

First aid stations, completely staffed with doctors, nurses and litter bearers, were at their stations and functioning throughout the city; although the equipment was inadequate at first, the personnel were adequately trained in their duties by many weeks of first aid instruction.

Civilian surgeons with previous instruction in military surgery were immediately available for civilian hospitals and the surplus of doctors was rushed to a military hospital, where they proved useful in caring for a large number of casualties.

(The physicians had previously been carefully catalogued regarding their special abilities, training and whereabouts.)

By previous arrangement, many station wagons and light trucks were immediately available for ambulance service. A corps of trained women drivers proved very useful.

Equipment for producing plasma and a plasma bank of about two hundred flasks were available through previous foresight and proved most useful. The equipment was immediately put to further use and the plasma bank has now been built up to about five thousand flasks.

Civilian hospitals were immediately expanded to maximum capacity by adding stored equipment and by evacuating the less ill patients to their homes. The precision with which civilian hospitals functioned was the reward of careful planning and previously trained personnel.

The board of health immediately went on a twenty-four hour basis to lend every effort in safeguarding the health of the community.

While a sudden disaster instinctively turns one's mind to the importance of first aid, of immediate care of casualties, of ambulances and trained personnel to care for the wounded, it is also well to keep in mind that, war or no war, women will keep right on having babies and they must also receive adequate care. What is more, the experiences in London showed that, under the acute stress of a bombing, women are apt to go into premature labor or to abort. Plans for a major disaster must therefore include obstetric provisions.

Locally our plans had been directed along several practical lines and, fortunately, had had some time to mature before the crisis hit us. The following proved to be very workable:

1. Obstetricians were assigned to maternity hospital posts instead of being used in other hospitals to care for casualties.

2. Pediatrician-public health nurse teams, equipped with incubator, oxygen and other equipment, were available for premature infants born before getting into a hospital.

3. A careful survey of all available maternity bed facilities in the community had been made and had proved the fact that such facilities were already overtaxed; there had been a rapid increase of population as the result of importation of defense workers and increasing military personnel. The sudden crisis caught us before we had been able to expand our maternity facilities, and it became obvious that to increase the obstetric load was possible only by decreasing the stay post partum. Our patients were therefore forewarned that, in case of a disaster, we would continue to offer the facilities of our delivery rooms but would expect them to return to their families earlier than under normal conditions.

4. Arrangements were made with the hospitals to prevent the encroachment on the maternity departments by casualties.

5. All public health nurses were given a refresher course in practical obstetrics to improve their efficiency in home deliveries.

6. Home delivery packs were made up and kept in readiness in a convenient place for district nurses or doctors.

7. Nursing personnel in obstetric departments should be kept intact regardless of the extra load the rest of the hospital might suddenly be compelled to carry.

8. All expectant mothers were repeatedly advised to continue planning for hospital deliveries, regardless of a crisis.

9. Competent pediatricians and obstetricians were to be kept available for consultation purposes as an aid to the general practitioner or to cover for him in case he was suddenly pressed into other disaster activities.

10. Prompt resumption of all obstetric and pediatric clinics was planned for as soon as circumstances possibly would permit.

HOW THE PLAN WORKED

With surprising ease, the obstetric load was carried with the minimum of friction. Postpartum patients were evacuated to their families without any protests. The delivery services and nursing facilities were adequate. The surprising fact, however, was that we did not get the flood of premature labors or abortions which were expected; there was a slight flurry the first day or two, but the incidence was hardly above normal. This can possibly be explained by two underlying factors: (1) The bombing came as a sudden surprise, giving us no time to develop the state of alarm that would accompany anticipation of such an event, and (2) the quality of American womanhood of today is such as to be able to face a real crisis with remarkable fortitude. The latter is an observation we have been able to make repeatedly in private and clinic cases and seems convincing that the mother of today instinctively retains some of the courage which allowed pioneer women to continue to rear their families in the face of hardship, privation and danger. However, it is fully appreciated that a second bombing here would be a much more severe test of fortitude than was the first and we are continuing to expect an increased load of abortions and premature labors in the event of another sudden bombing; the plans outlined are still being kept as a practical working basis.

WHAT WE HAD NOT PLANNED

It is hard to anticipate every eventuality ahead of time, and we found here that unexpected circumstances presented themselves, demanding solution. To mention a few:

1. The immediate and continued blackouts made night traveling difficult, slow and hazardous. Pregnant women who were developing symptoms of beginning labor were advised to get in touch with their physicians before nightfall and to enter the hospital during daylight hours as often as circumstances warranted. The radio and the press were used to disseminate such information.
2. The declaration of sudden martial law prohibited any one from being on the street at night except a few specially privileged classes. Police, taxicabs, doctors, civilian guards, aid station employees and ambulances were among the privileged classes. In the event of onset of labor at night, taxicabs and police patrol cars proved adequate for such transportation and the police radio patrol system proved efficient in locating the call of the pregnant woman with the minimum of delay.
3. A high percentage of our midwives proved to be aliens and were given no leeway in privileges of being on the street at night. They were quickly convinced that any of their patients going into labor at night would have to be referred to the nearest hospital as the only solution of that problem.
4. There was an abrupt increase in incidence of eclamptogenic toxemia. This is understandable when one realizes that a prolonged period of stress would tend to disrupt metabolism and throw a considerable extra load on the nervous system.
5. The question arose what to do with the early pregnant woman whose husband had suddenly been killed. There were numerous instances of women who had been severely shocked by the sudden loss of the husband in the unexpected catastrophe, added to which was the discovery of an early pregnancy. It was gratifying to note the renewed courage of each of these women when she was advised to carry through with her pregnancy for two logical reasons: (1) she would be able to have a living memory of her husband who died so gallantly and (2) she would be able to make a real contribution to the national program by bearing a child. I saw no hint of refusal to carry through after these facts had been carefully explained.

COMMENT

The experiences of managing a community wide obstetric program in Hawaii before, during and after a sudden major disaster are described in the hope that these facts may be of some value to other communities in their efforts to make similar plans. Previously made plans proved workable in an acute crisis, although several unanticipated problems arose which were solved without difficulty.

LATER.—Since the foregoing was written, Honolulu has had two air raid alarms and one bombing; the program outlined is still proving itself useful.

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THE VENOGRAPHIC DIAGNOSIS OF
THROMBOPHLEBITIS OF THE
LOWER EXTREMITIES

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Convincing evidence is rapidly accumulating that most pulmonary emboli of extracardiac origin arise from thrombophlebitis in the deep veins of the lower extremities.¹ The passage of an embolus from the leg to the lung can be prevented by division of the femoral vein. Indeed, Fine and Sears² have recently urged this procedure in all cases of deep thrombophlebitis of the lower extremity as the most effective prophylaxis against embolism. The prevention of pulmonary embolism depends on the early recognition of the venous thrombosis, but the clinical evidence of phlebitis may be equivocal or entirely lacking until a pulmonary infarct indicates its presence. A method which can establish the diagnosis and locate the side on which the process lies has been provided by the venographic technic recently described by Bauer.³ The benefits of this diagnostic procedure are the subject of this communication.

TECHNIC

The patient lies on his back with a 6 cm. block heel. A 14 by 17 inch x-ray film⁴ is placed under the leg, its lower edge about 3 inches above the ankle. A small incision is made about 1 cm. behind the external malleolus. A constant small vein is found here which communicates readily with the deep system. Through a fine needle 20 cc. of 35 per cent diodrast^{5a} is injected at a uniform rate during a period of sixty seconds. At the end of the injection the exposure is made.

Resistance to the injection may be notably increased over that encountered in the absence of deep thrombosis. A useful hint of the presence of thrombosis is a decid-

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2. Fine, Jacob, and Sears, J. B.: The Prophylaxis of Pulmonary Embolism by Division of the Femoral Vein, *Ann. Surg.* 114:801, 1941.
3. Bauer, G.: Venographic Studies of Thromboembolic Disease, *Acta chir. Scandinav. (suppl. 61)* 84:1, 1940.

4. Bauer uses a larger film.

5a. Supplied by the Winthrop Chemical Company.

edly increased caliber of the vein at the ankle. If the foot is held in moderate inversion the shadow of the veins will not be obscured by that of the bones of the leg. The normal venogram shows the deep veins of the calf, the popliteal and the femoral vein well outlined. A few superficial veins also are seen. Thrombophlebitis is characterized by partial or complete absence of filling of the deep veins with the contrast medium. Superficial collateral channels may be evident even in the acute stage, although they are more obvious in long standing deep thrombophlebitis. When the venogram of an extremity is repeated, the identical pattern of normal filling or of a filling defect is reproduced.

The value of this type of venography is illustrated in the following cases:

CASE 1.—A woman aged 35 entered the hospital complaining of recurrent attacks of upper abdominal pain of several years' duration. A Graham test was positive for cholelithiasis. Cholecystectomy and choledochostomy were done. The post-operative course was uneventful except for an unexplained daily

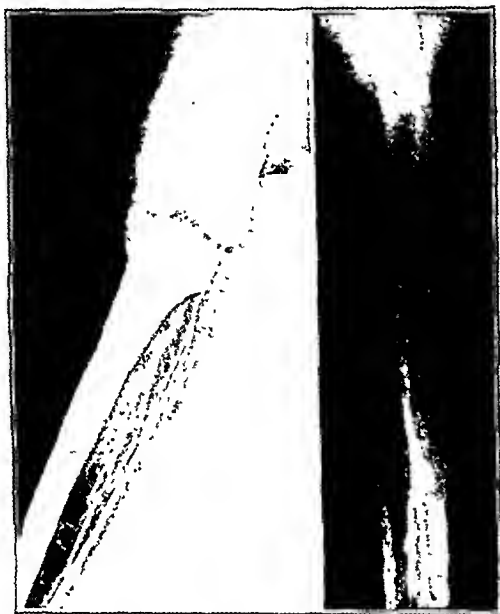


Fig. 1 (case 1).—Normal filling of deep system on both sides.

low grade elevation of temperature during the second week after operation. The leukocyte count varied between 12,000 and 15,000. Because of these signs deep phlebitis in the legs was suspected and looked for, but no evidence for this diagnosis could be found. Venograms were done on both lower extremities during this period and normal findings were obtained (fig. 1). On the nineteenth postoperative day the patient complained of pain in the left calf and pain in the right side of the chest. Examination disclosed tenderness in the left calf and dulness to percussion and rales at the right lung base. Bilateral venograms were repeated and showed failure of filling of the deep veins of the left leg (fig. 2). Division of the left common femoral vein was done. At operation, six hours after venography, diodrast was found in the femoral vein. No clot or thrombus was present at the site of division. Within twenty-four hours the pain and tenderness in the left leg disappeared completely. Three days later the patient was allowed to be up and about and was discharged a week after division of the femoral vein free from all symptoms and signs in the chest and extremities. There was no edema in either leg.

In this case the unexplained low grade fever aroused the suspicion of deep phlebitis, but in the absence of evidence to support this diagnosis the first venograms were taken and found normal. When these were

repeated a week later following the appearance of pain in the leg and chest, a distinct change in the veins in the left leg was observed.

CASE 2.—A man aged 60 entered the hospital for the repair of a recurrent inguinal hernia. Examination disclosed hypertension, pulmonary emphysema and a right inguinal hernia. Herniorrhaphy was done, using fascia taken from the right thigh. The postoperative course was uneventful for twelve days. He was then allowed up in a chair. That evening he complained of pain in the left calf, which was found to be slightly tender on deep palpation. There was slight pain on dorsiflexion of the foot. There was no edema, cyanosis or increased heat. There was no elevation of temperature or pulse rate, and the leukocyte count was 10,700. A venogram of the left leg showed failure of filling of the deep system of veins (fig. 3). A venogram of the right leg taken for comparison showed normal filling of the deep veins. The small vein at the ankle on the left side was observed to have twice the diameter of the same vein on the right side, and there



Fig. 2 (case 1).—Second venogram of left leg showing acute thrombophlebitis with complete absence of filling of the deep veins of the lower leg, the popliteal vein and the lower part of the femoral vein. The greater and lesser saphenous veins are filled.

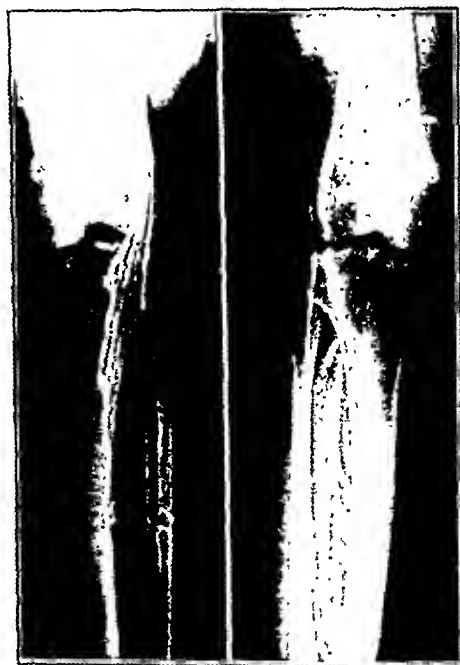


Fig. 3 (case 2).—Failure of filling of the deep veins below the popliteal is shown on the left. The superficial veins are larger and more numerous on this side.

was much more resistance to injection on the left side. The next morning the patient complained of a sudden onset of pain in the right side of the chest aggravated by inspiration. Rales, which were not present previously, were heard in the right lower lobe. A diagnosis of pulmonary infarction was made

and confirmed by a roentgenogram. Under local anesthesia the left femoral vein was divided just distal to the profunda femoris. The vein at this level appeared normal, but when it was divided diodrast escaped from its lumen. This was interpreted as being due to a greatly retarded blood flow from the veins blocked by thrombus. The patient became free from pain and tenderness in the leg within twenty-four hours after division of the vein. Later there was a small pleural effusion and evidence of infection in the infarcted area of the lung. Further progress was satisfactory until the twenty-third post-operative day, when after having been up and around he experienced severe pain in the left side of the chest followed by hemoptysis. Severe dyspnea and cyanosis developed. Examination showed rales and a friction rub in the left lower part of the chest and evidence of infarction in the left lower lobe, which was confirmed by roentgenography. Since the source of the second infarct was uncertain, venograms were again taken of both legs. The injection on the left side was made into the great saphenous vein in the mid thigh, as suggested by Bauer, in order to outline the femoral vein proximal to the site of division as well as the iliac vein. The roentgenogram (fig. 4) showed normal filling of these structures. The venogram on the right side, however, disclosed an absence of filling in one of the tibial veins, and this was considered to be due to thrombosis (fig. 5). Accordingly, despite the patient's respiratory distress the right femoral vein was divided below the vena profunda under local anesthesia. Although convalescence from the pulmonary complication was somewhat stormy for a few days, recovery followed.

If left femoral vein ligation in this case had been done immediately after the venogram disclosed evidence of thrombosis, the first infarction might have been averted. When the second infarct occurred, further venography excluded thrombosis in the left common femoral and iliac veins and located the block in the right anterior tibial vein.

CASE 3.—A man aged 38 entered the hospital complaining of pain in the right side of the chest and cough of three weeks' duration. The history disclosed that asymptomatic varicose saphenous veins had been present for ten years in the right leg. These had been injected five years before admission. Physical examination was negative except for dullness and diminished breath sounds throughout the lower two thirds of the right lung field and varicosities of the saphenous system of the right leg. Roentgenograms of the chest showed a pleural effusion. Thoracentesis yielded grossly bloody fluid. Culture, Gram and Ziehl-Neelsen stains showed no bacteria. No tumor cells were found in the sediment of the centrifuged pleural exudate. Pulmonary infarction was considered in the differential diagnosis. Accordingly, the deep veins of the legs were investigated. No clinical evidence of deep phlebitis was apparent, but venography showed failure of filling of the deep system on the right side (fig. 6). The venogram of the left leg



Fig. 4 (case 2).—Venogram of left common femoral vein and iliac vein. This roentgenogram was taken after the injection of diodrast into the greater saphenous vein in the thigh, ten days after division of the femoral vein below the profunda. No evidence of disease of the veins is present.

showed normal deep veins. The right common femoral vein was divided. No clot was found at the site of division, but diodrast escaped from the distal end of the divided vein as in the previous cases. The convalescence was uncomplicated. The pleural effusion gradually disappeared. Further x-ray studies disclosed no evidence of disease in the pulmonary parenchyma. The patient was discharged eight days after operation with no edema or disability in the legs.

In this case the only symptoms were pain in the chest and cough. The only significant physical findings were the superficial varicosities of the right leg and a bloody pleural effusion. Neoplasm, tuberculosis and the presence of pulmonary infarction were considered in the differential diagnosis. Despite complete absence of clinical evidence of phlebitis, venographic investigation of the legs gave clear evidence of an obstructive process in the deep veins of the right leg (fig. 6). The right femoral vein was divided to prevent the occurrence of further pulmonary infarction.

CASE 4.—A woman aged 40 entered the hospital complaining of urinary incontinence. She was obese and had hypertension. Two vaginal operations for incontinence were done in a period of two months. At the end of this time, when the patient was allowed out of bed, she complained of difficulty in walking because of pain in both calves, which were tender on pressure. A daily temperature elevation of 1 degree was noted, but there was also evidence of mild urinary sepsis. It was not clear whether or not the patient had deep phlebitis. Venograms showed normal filling of the deep veins of the legs (fig. 7). The patient was therefore allowed to continue to walk about, with gradual disappearance of the discomfort in the legs.

This patient's complaint of pain in the legs when first allowed out of bed and the low grade temperature elevation suggested the possibility of bilateral phlebitis, but the normal venograms provided the only assurance obtainable that she could be permitted to be active without fear of a pulmonary embolus.

COMMENT

Until recently venography has been unsatisfactory for the diagnosis of thrombophlebitis because the techniques utilized were incapable of visualizing the entire deep system of veins. Since evidence is now available¹ that the source of most pulmonary emboli is thrombophlebitis in the deep veins of the lower leg, the venographic method of Bauer, which adequately visualizes

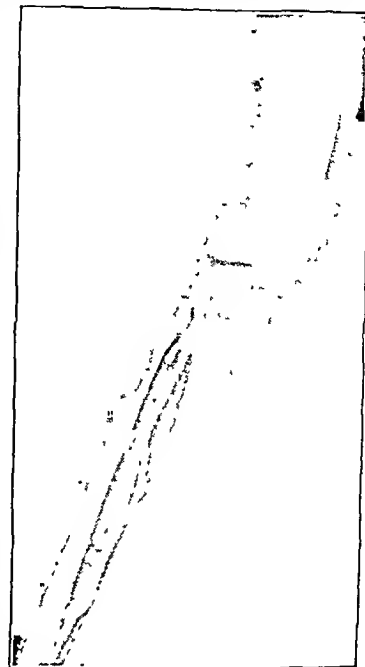


Fig. 5 (case 2).—Second venogram of right leg. The failure to outline the greater part of the anterior tibial vein by this venogram in contrast to the better filling shown by the previous venogram of the same leg (fig. 3) suggests the development of thrombosis in this vessel.

these veins,⁵ provides the most reliable means of establishing the diagnosis when the signs and symptoms are inconclusive or wholly lacking. An extremely useful guide for the institution of prophylactic therapy for pulmonary embolism is thus provided.

The possibility of setting up thrombosis in the veins by injection of diodrast is probably not an important consideration in view of Bauer's experience and the absence of phlebitis following the use of diodrast for intravenous urography. A long exposure (twenty-four hours in one instance) of the intima of the femoral vein to diodrast has been observed without gross evidence of injury.

Phlebitis has not developed at the site of injection, even when it is repeatedly done. We have nevertheless adopted the suggestion of Dougherty and Homans⁶ that the vein be washed out with saline solution after the injection of the diodrast. Another theoretical hazard, i. e. the release of a clot by the pressure of the injected fluid, has not occurred to our knowledge.

We have observed dilatation of the constant small vein at the ankle which is used for the injection in the presence of thrombophlebitis. We have also noticed increased resistance to the injection in the presence of thrombophlebitis.

The finding of diodrast in the femoral vein at the time of division is evidence of a retarded flow in the deep system of veins and provides indirect confirmation of the venographic diagnosis of thrombophlebitis.

There is frequently good reason for performing venography on both sides, not only to confirm or refute the clinical evidence on the side under suspicion, but also to demonstrate the presence or absence of the disease in the unsuspected side. It should be clear that

and our experience to date suggest that, when properly performed, a normal venogram can be regarded as conclusive evidence against thrombophlebitis in the veins visualized.

After operation patients commonly experience pain in the calves when they first begin to walk. In this situa-



Fig. 7 (case 4).—The deep veins fill normally.

tion a suspicion of phlebitis with its implied danger of embolism is unavoidable. Heretofore a guide to an intelligent choice of action has not been available. Fatal embolus just before or soon after discharge from the hospital occasionally results in such circumstances. By utilizing the venographic method under discussion a means of instituting preventive therapy is now possible.

CONCLUSIONS

1. A technic described by Bauer for the visualization of the deep veins of the leg has been useful in the diagnosis of acute thrombophlebitis.

2. The early diagnosis of thrombophlebitis by this method facilitates the institution of effective prophylaxis against pulmonary embolism at an earlier period than has been possible heretofore.

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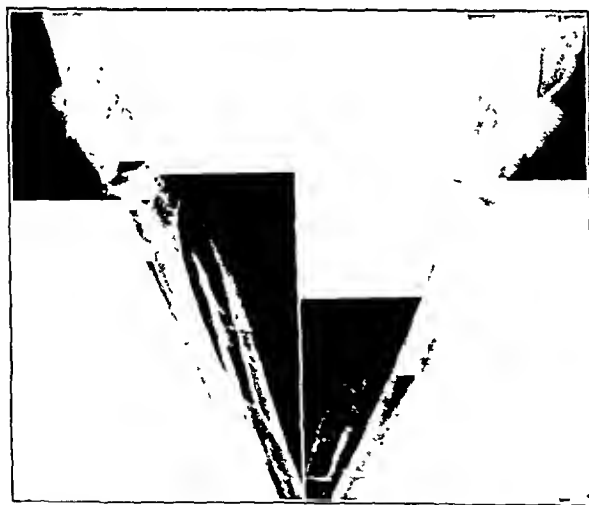


Fig. 6 (case 3).—The deep veins of the upper half of the right lower leg, the right popliteal vein and the right femoral vein do not fill. The venous return is by way of the varicose external saphenous vein.

the process is frequently bilateral and that an embolus may arise from either side whether or not signs and symptoms are present. The data provided by Bauer

5. The method advocated by Dougherty and Homans⁶ is substantially the same as that advocated by Bauer, although the former authors applied the method primarily for study of the veins in the thigh rather than the lower leg. Bauer emphasized the value of roentgenographic evidence in the lower leg for the diagnosis of acute thrombophlebitis. A 14 by 36 inch film and cassette is now available for filming the entire leg.

6. Dougherty, John, and Homans, John: Venography, a Clinical Study, Surg., Gynec. & Obst. 71: 697 (Dec.) 1940.

Leadership.—If four men guess wrongly on a given prediction and the fifth man guesses rightly we say "how wise" when in reality we ought to say "how lucky." A guess that turns out right is not a prediction; it remains a guess. A man whose prediction is justified by future events need not necessarily have found the one solution possible. In much of science there is one answer and one answer only to a given problem. It is not plus or minus four but plus four and not minus four. In many social problems, on the other hand, the correct solution is the acceptable solution, the workable solution, and there may be several such solutions. Lincoln found his solutions by a method all his own. He himself disclaimed leadership. He said the people led. He waited until he thought that he knew what the people were thinking. There is another type of leadership that may be higher still, the type that teaches a people to understand what it ought to want. Only in conversation, using the term in its broadest sense, has this been done in American life, with conspicuous failures all too often in oil conservation, soil conservation, forest conservation.—Bowman, Isaiah: Enduring Purpose, *Assn. Am. Coll. Bull.* 26:194 (May) 1940.

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CHRONIC HEMOLYTIC STREPTOCOCCUS ULCERS OF THE EXTREMITIES

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It is indeed strange that chronic hemolytic streptococcus ulcers of the extremities have received so little attention and comment. This is all the more unusual since the lesion itself forms a clearcut entity and since there is a specific treatment for the condition.

There are but 5 of these cases reported in recent literature.¹ Nevertheless, 31 such cases were seen in the surgery clinic of the Indianapolis City Hospital during the past two and one-half years. The inference is obvious. Many chronic hemolytic streptococcus ulcers of the extremities have gone undiagnosed. In fact, none were found at the Indianapolis City Hospital until Goodman's¹ report in 1938.

DESCRIPTION

Since so many streptococcic ulcerations have recently been described, it is essential that a clearcut picture be

Practically all the ulcers are found on the lower leg. In the present report only two were present on the hand.

The hemolytic streptococcus can be found in cultures from all ulcers, although it may not be identified on the first culture. This organism may appear in pure culture but most frequently has some contaminant. In the present report the contaminant was *Staphylococcus albus* in one half of the cases. These contaminating organisms are not considered to be growing in symbiosis with the hemolytic streptococcus.

There is one feature of the disease which is of considerable aid in suggesting the diagnosis. Most chronic ulcers have a definite background. They are superimposed on old varicosities, arteriosclerosis, frost bite or syphilis. This is not the case in chronic hemolytic streptococcus ulcer. This ulcer has no such background. It appears usually where there is no vascular impairment and where the circulation is quite adequate. It is seen most frequently in children and young adults. The average age at the Indianapolis City Hospital was 22.7 years. The oldest patient was 57, the youngest 3

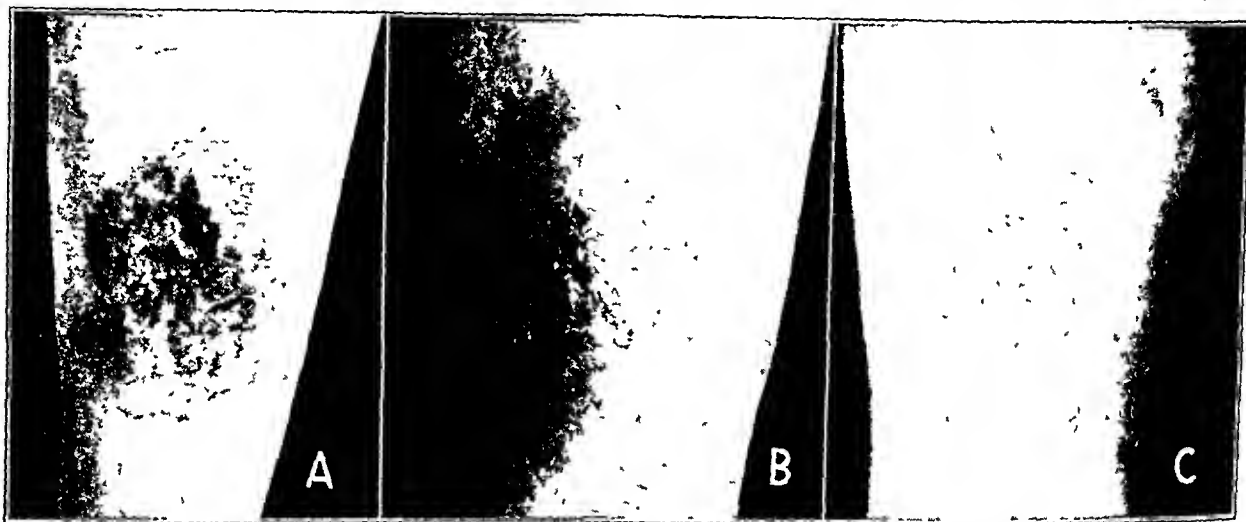


Fig. 1 (H. B., aged 40) —Ulcer and excoriation over anterior tibial region spreading under local treatment. This followed a bruise and slight abrasion two months prior to A. B, after eighteen days of sulfanilamide 60 grains (4 Gm.) daily. C, complete healing after dropping off of crust a few days later.

given of the condition at hand. It bears no relation in appearance or course to the burrowing ulcers or symbiotic gangrene described by Meleney.²

The ulcer starts at the site of a slight cutaneous excoriation or insect bite. After a few days a small indolent ulcer appears. This is usually about 1 cm. in diameter but may progress slowly to 5 or 6 cm. in a week or two. Pain is not an outstanding feature.

The ulcer has none of the characteristics which suggest to the clinician the possibility of a hemolytic streptococcus infection. The tissue reaction is slight, being confined to the reddened ulcer margin. This may or may not be undermined. There is no surrounding edema or lymphangitis. The base of the ulcer weeps a watery serum from a pale atrophic granulation tissue. The lesion as a whole gives the impression that the tissues are making little or no effort to heal the defect.

CASES

The cases identified and studied were seen in the outpatient surgical clinic of the Indianapolis City Hospital. No attempt has been made to list the cases separately. They have been summarized and the results noted. Three typical cases are shown in the accompanying illustrations. All cases were seen during the two and one-half year period starting in October 1938 and ending in April 1941.

During this time 52 chronic ulcers were studied. From these were obtained one or more cultures of the (beta) hemolytic streptococcus. Of this number there were 21 ulcers which were considered to have a definite background of vascular impairment or syphilis. These were dropped from the present study, leaving 31 cases in which the ulcer was thought to be due primarily to the hemolytic streptococcus. No other contributing cause could be found.

All ulcers appeared on the lower extremity with two exceptions. These were in children with several ulcers over the dorsum of the hand and arm. There were 2 instances in which more than 1 member of the same family had a chronic hemolytic ulcer at the same time.

From the Department of Surgery, Indianapolis City Hospital, and the Indiana University School of Medicine

1. Goodman, M. H.: Chronic Streptococcal Ulcer of the Skin, *J. A. M. A.* 111:1427 (Oct. 15) 1938. Wright, C. S. and Friedman, Reuben: Chronic Streptococcal Ulcer of the Skin Responding to Sulfanilamide, *Arch. Dermat. & Syph.* 29:554 (March) 1939. Hamburger, H. J.: Observations on the Pathology and Therapy of the So-Called Frontier Sore, *Indian M. Gaz.* 74:151 (March) 1939.
2. Meleney, F. L.: Zinc Peroxide in the Treatment of Microaerophilic and Anaerobic Infections, *Ann. Surg.* 101:997 (April) 1935.

Two patients were admitted to the hospital for treatment. The rest were handled entirely as outpatients. All cases were followed, and so far there have been no recurrences in the primary hemolytic streptococcus ulcer group.

The ulcers varied in size from 1 cm. to 6 cm. Local adjacent skin inflammation or edema was found in only 5 instances. The remaining cases merely showed an indolent sluggish ulcer with little or no reaction.

The patients had had their lesions for from two weeks to four years when specific therapy was started in the hospital. Omitting the four year case, the average duration of the ulcer was two months. During this time they had received all types of home remedies plus those used currently in the clinic. The use of the latter drugs depended on the whim of the particular clinician. They included 2 per cent methylosaniline (gentian violet), tincture of merthiolate, scarlet red ointment, boric acid ointment, zinc oxide ointment, ammoniated

were not followed on all the patients, but this is a precaution which certainly should not be overlooked.

Occasional blood sulfanilamide determinations were made. These were rather low, varying from 3.5 to 5.2 mg. per hundred cubic centimeters of blood. Apparently no greater concentration was necessary in this type of infection.

RESULTS

There were 5 of the 31 cases of primary chronic hemolytic streptococcus ulcer which healed under local wet dressings and applications. These healed in an average of fourteen days.

Six more patients received entirely inadequate amounts of sulfanilamide. Several of these were lost temporarily to the clinic and continued with local home remedies. Their ulcers eventually all closed in an average of fifty-one days.

This leaves 19 patients who received adequate amounts of sulfanilamide. These patients had had their

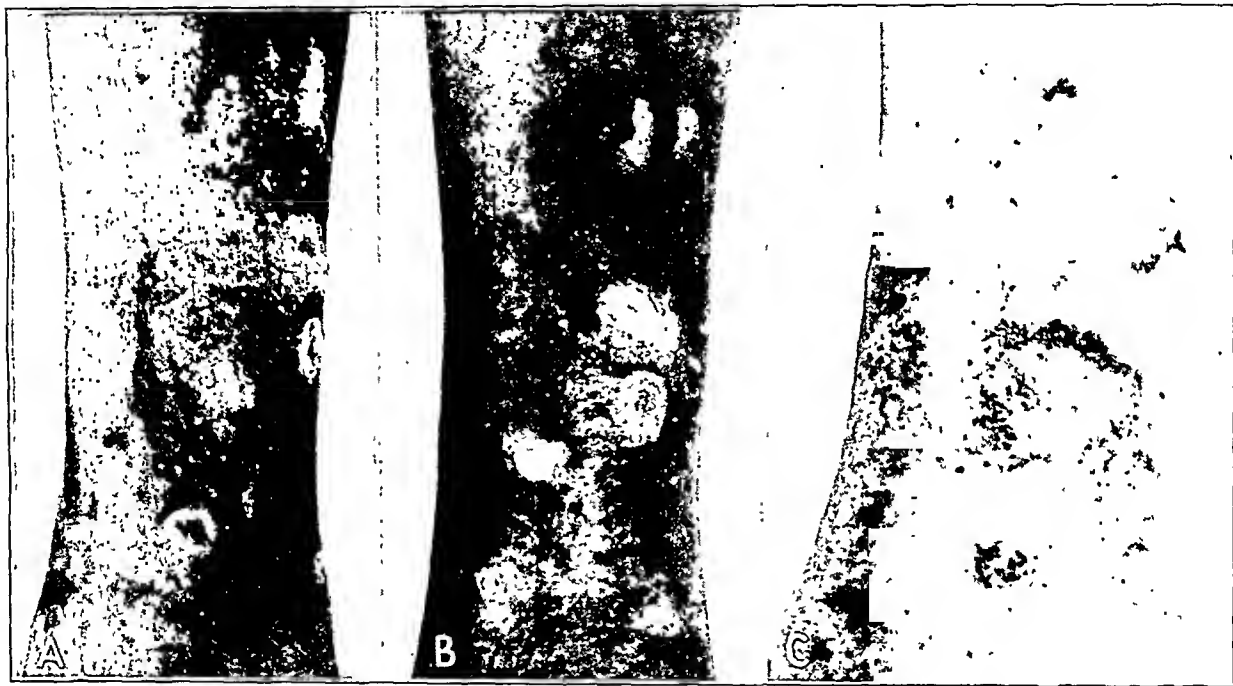


Fig. 2 (W. Y., Negro aged 26 years).—A, ulcers present for four years and being treated regularly in the surgical clinic. When cultures were finally taken and hemolytic streptococci found, 10 ulcers were present. B, after two days of sulfanilamide, ulcers showed signs of healing with healthy granulations. C, ulcers completely healed after fourteen days of sulfanilamide 60 grains (4 Gm.) daily.

mercury ointment, wet dressings of physiologic solution of sodium chloride, magnesium sulfate, Burow's solution, diluted solution of sodium hypochlorite, 70 per cent alcohol and dusting powders of thymol iodide and sulfanilamide.

TREATMENT

The lesion usually received varying amounts of the foregoing drugs. Then some one usually became curious as to why healing did not take place and finally took a culture. When a positive culture was obtained, specific therapy was instituted.

Specific therapy consisted of oral sulfanilamide as suggested by Goodman.¹ The adult dosage varied from 20 to 90 grains (1.3 to 6 Gm.) daily. In general the smaller doses were ineffectual but doses of from 60 to 70 grains (4 to 4.5 Gm.) daily seemed quite sufficient.

The patients were followed in the outpatient clinic to guard against untoward reactions. Blood counts

ulcers for from two weeks to four years. Omitting the case of four years' duration, they had had their ulcers for an average of seven and seven-tenths weeks. Following the specific drug therapy the ulcers were healed in an average of one and eight-tenths weeks.

The dramatic rapidity with which some of these chronic ulcerations heal is nicely shown in figure 2. The ulcerations had been present in this 26 year old Negro for four years. During most of that time he had been seen in the surgical clinic several times a week. During that time he had received every type of ointment and solution on the dressing table. At the time the condition was finally recognized, he had 10 ulcers measuring from 1 to 2 cm. in diameter. He was given 60 grains (4 Gm.) of sulfanilamide daily for fourteen days. At the end of this period the ulcers were completely healed for the first time in four years. They have remained healed.

The rapidity of healing under specific therapy is one of the most striking features of these ulcers. It is indeed thrilling to see them literally heal before one's eyes.

What has been said about the specificity of sulfanilamide holds true only for primary chronic hemolytic streptococcus ulcers and not for all chronic ulcers which contain this organism. During the course of the present study 21 ulcers were encountered which contained hemolytic streptococci but had as their basis varicosities, phlebitis, arteriosclerosis or syphilis. These patients were given sulfanilamide. The result was a disappearance of the hemolytic streptococcus, but the fundamental background of the ulcer still persisted and so did the ulcer.

One of the cases which was considered clinically and bacteriologically to be typical of chronic hemolytic streptococcus ulcer failed completely with sulfanilamide. Under this therapy the hemolytic streptococcus disappeared but the ulcer persisted. No other background

improvement. The suggestion is therefore made that, in vascular ulcers containing hemolytic streptococci, sulfanilamide be used as an adjunct to other forms of therapy. The drug, of course, would be useless when the organism is not present.

An interesting feature in epidemiology is noted in this Indianapolis City Hospital series. Of the 31 cases of primary chronic hemolytic streptococcus ulcer 27 (87 per cent) had their onset in the last six months of the year. This does not mean that this number were all treated during this period but that 87 per cent started from a scratch, abrasion or insect bite which was received between the first of June and the last of December. No adequate explanation has been found for this seasonal incidence. The contagious nature of the lesion is indicated by the fact that five ulcers occurred in two families. Three members of one family had ulcers at the same time, as did two in a second family.

In the cases here reported sulfanilamide was given orally. It is interesting to speculate on the possibility

of applying the powdered drug directly on the local wound. It would seem to be an ideal situation for such use. The truth is that the oral use has been so completely satisfactory and specific that those in charge were loath to make the change. The drug was used locally in treatment of 1 patient with a vascular background caused by previous trauma. The ulcer was over the right anterior tibial region and measured 4 cm. in diameter. It had been present for one and one-half years. From the wound the specific organism was cultured and the patient started on sulfanilamide. This proved too toxic to him and so the powdered drug was applied locally. The hemolytic streptococcus had disappeared from the wound when cultures were taken three weeks later and the ulcer was completely healed at forty days (fig. 3). It is planned to use powdered sulfanilamide locally in subsequent cases of primary chronic hemolytic streptococcus ulcer.



Fig. 3 (M. R., aged 41) —A, chronic ulcer of anterior tibial region containing hemolytic streptococci. Duration, one and one half years. The ulcer had a vascular background following an injury. The patient could not tolerate oral sulfanilamide and so the powder was applied locally. Hemolytic streptococci had disappeared from the wound when a culture was taken three weeks later. B, complete healing after forty days of powdered sulfanilamide locally and no other type of therapy.

could be found in this patient. The ulcer finally healed on home remedies one month after the patient left the hospital. It is possible that a fungous infection was an added factor here, though laboratory findings are lacking. Nevertheless this case represents a flat failure, since it answered all the requirements of the chronic hemolytic streptococcus ulcer.

COMMENT

It must be emphasized that chronic hemolytic streptococcus ulcer is a very distinct entity and one which is rather frequently encountered. The oral use of sulfanilamide is specific for the lesion. This is true with the exception of an occasional case which is either resistant or more probably misdiagnosed. Among the present series there was 1 such case in 19 in which adequate doses of sulfanilamide were administered. Healing in the remaining cases was spectacular.

The hemolytic streptococcus was also cultured from a large group of varicose and other vascular ulcers. Of course, in these instances sulfanilamide did not cure the lesion. It did, however, cause considerable

SUMMARY

1. Chronic hemolytic streptococcus ulcers of the extremities constitute a definite entity with a specific therapy.

2. The lesion is characterized by its chronicity, similarity to chronic ulcers having vascular backgrounds, and lack of inflammatory reaction which might suggest its true nature. Usually it is seen in children and young adults with no vascular impairment. Diagnosis is confirmed by the culture of hemolytic streptococci from the ulcer. In no way does it resemble the symbiotic burrowing streptococcus ulcers.

3. Only 5 chronic hemolytic streptococcus ulcers have been reported in recent literature. None were seen at the Indianapolis City Hospital until a search was made for them. Thirty-one such cases were seen and treated in this institution in the past two and one-half years. The deduction is obvious.

4. This type of ulcer may heal under local treatment. Usually it does not. Oral sulfanilamide is specific.

5. There were 19 cases in the present series in which adequate amounts of sulfanilamide were given. These ulcers healed completely in an average of one and eight-tenths weeks, although they had first been treated locally with all types of drugs for an average of seven and seven-tenths weeks.

6. The local use of powdered sulfanilamide would seem to be indicated in this type of lesion, though it was not used in the present series.

7. It is suggested that cultures be taken of all chronic ulcers of the extremities to identify those belonging to the chronic hemolytic streptococcus group. In chronic ulcer cases with a vascular background and containing hemolytic streptococci, sulfanilamide might well be employed as an adjunct to other forms of therapy.

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OBSERVATIONS ON THE "EGG WHITE INJURY" IN MAN

AND ITS CURE WITH A BIOTIN CONCENTRATE

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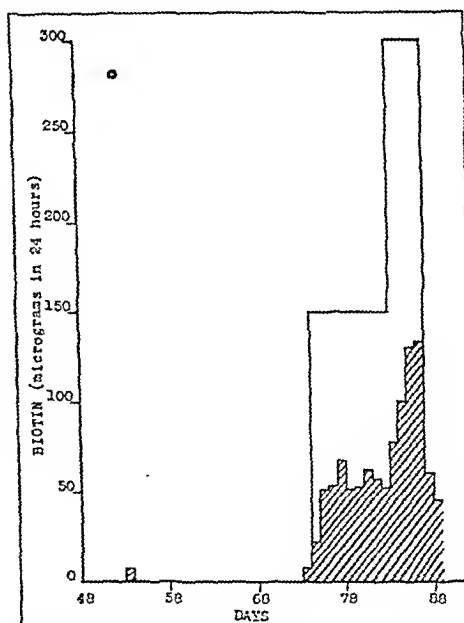
Many investigators have noted that the inclusion of large amounts of egg white in special experimental diets causes a definite nutritional disease in animals. This disorder, commonly called egg white injury, has for its chief symptom an "eczematous dermatitis" which can be prevented or cured by a protective substance formerly called vitamin H which is present in certain foodstuffs. There appears frequently in rats, in addition to the severe general eczematous dermatitis involving the eyelids and lips, an ischemic gangrene of the tip of the tail, presumably due to local vasoconstriction. Recent reports¹ have indicated that vitamin H is identical with biotin, a yeast growth factor, and also with coenzyme R, a growth and respiration factor for many strains of the legume nodule organism *Rizobium*. Williams and his co-workers² have demonstrated that the so-called egg white injury is due to an induced biotin deficiency caused by the binding of the dietary biotin by a protein fraction of raw egg white "avidin," thereby preventing the absorption of this vitamin from the intestinal tract.

In chicks a scaly dermatitis not due to pantothenic acid deficiency has been cured by vitamin H concentrates,³ while biotin concentrates have protected turkey poult against a specific dermatitis.⁴ It appears that

this vitamin is also involved in the graying of fur in rats and mice⁵ as well as in the synthesis of lipids by the rat.⁶

In view of the growing significance of biotin in animal nutrition, it seemed important to determine whether any of the phenomena of human deficiency disease might be related to biotin deficiency. To this end a small group of volunteers ate a diet planned to contain a minimal amount of biotin, which was composed of rice 125 Gm., patent white flour 80 Gm., farina 75 Gm., cane sugar 205 Gm., lard 32 Gm., washed butter 10 Gm. and lean beef 25 Gm. To this was added 200 Gm. of dehydrated egg white. The basal components represented 387 Gm. of carbohydrate, 31 Gm. of protein and 32 Gm. of fat, with a total caloric value of 1,960. In addition, 928 calories was derived from the 160 Gm. of protein and 32 Gm. of fat of the egg white for a grand total caloric value of 2,888. As the egg white was given in solution in a one-third aliquot with each meal, the percentage of egg white of the total food ingested daily was dependent on the amounts of the other components consumed. Usually the egg white furnished in excess of 30 per cent of the total daily caloric intake. Such a diet is poor in vitamins of the B complex except for riboflavin, which is present in desiccated egg white in amounts approximating 10 mg. per hundred grams.⁷ Consequently the following vitamin supplement was given daily: thiamine hydrochloride 6 mg., riboflavin 9 mg., nicotinic acid 75 mg., pyridoxine 5 mg. and calcium pantothenate 5 mg. In addition, ascorbic acid 75 mg., vitamin A 5,000 units, ferrous sulfate 1 Gm. and calcium lactate 1 Gm. were given.

Of seven volunteers, it has been possible to continue 4 under observation to a satisfactory conclusion. Three were white men, the fourth a Negro woman. All were in good general condition and free from symptoms and



Excretion of patient J: shaded area, biotin excretion; unshaded area, biotin administered.

signs of avitaminosis when the experiment was begun. During the third and fourth weeks all 4 subjects developed a fine, scaly dermatitis which did not itch and

The authors were given constant help and valuable suggestions by Dr. R. E. Butler and technical assistance by Mrs. Marjorie Bie.

This investigation was made possible by grants in aid by the John and Mary R. Markle Foundation and an anonymous donor, and by donations of vitamins by many manufacturers.

From the University of Georgia School of Medicine and University Hospital (Drs. Sydenstricker, Singal, Briggs and DeV Vaughn) and the National Institute of Health (Dr. Isbell).

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7. Personal communication to the authors from Armour & Co., Chicago.

which disappeared spontaneously. Thereafter nothing of significance was noted until the seventh week, when 1 patient developed a maculosquamous dermatitis of the hands, arms and legs. During the seventh and eighth weeks all patients showed a striking grayish pallor of the skin which was out of proportion to the blood picture and was interpreted as evidence of peripheral vasoconstriction. During the same period the 3 white patients showed definite atrophy of the lingual papillae, patchy with the production of a "geographic" tongue in 1, general in 1 and affecting the lateral thirds of the tongue in the third. The Negro patient showed no tongue changes until the fourteenth week of the experiment, when rather rapid denudation of the tongue began. It was notable that the tongues of these patients remained pale with none of the capillary engorgement seen in pellagra or ariboflavinosis. During the ninth and tenth weeks all patients showed dryness of the skin of the extremities with well defined reticulation and a tendency again to fine, branny desquamation; this dermatosis was very similar to that observed during the early period of the experiment. No ocular or genital lesions were observed.

After the fifth week prominent symptoms were strikingly similar to those reported for experimental thiamine deficiency. Mild depression progressed to extreme lassitude, somnolence, hallucination in 1 patient and a mild panic state in 2. Muscle pains, hyperesthesia without demonstrable neurologic changes and localized paresthesias occurred in all 4 subjects. No definite reflex changes were observed. Anorexia progressed to nausea and sitophobia. It was extremely difficult to get these subjects to continue the diet. The caloric intake fell off rapidly in all during the last three weeks of the experiment. Two patients with electrocardiographic evidence of coronary ischemia had precordial pain. The electrocardiograms could not be differentiated from those attributed to thiamine deficiency.

Examinations of the blood at weekly intervals showed a definite diminution in the hemoglobin content, the number of erythrocytes and particularly the volume of packed red cells. These changes occurred in spite of a theoretically adequate intake of iron and a very large protein fraction in the diet. All 4 patients showed an increase in bile pigments and cholesterol in the blood.

Determination of biotin excretion in the urine showed that at the end of seven and eight weeks of the experimental regimen the subjects excreted from 3.5 to 7.3 micrograms of biotin in twenty-four hours as compared with the excretion of 29 to 62 micrograms by persons taking a normal diet.⁸

Treatment with an injectable biotin concentrate⁹ has been completed in 3 of the 4 experimental subjects. The daily dose has varied from 75 to 300 micrograms. The minimal amount required for prompt relief of symptoms seemed to be 150 micrograms daily. Depression, muscle pain, precordial distress and anorexia have been abolished on the third to fifth day of treatment. Striking relief of depression amounting almost to euphoria occurred in 2 patients. Active distaste for the diet was replaced by willingness, even eagerness, to eat it although there was no significant increase in the amount consumed. The striking ashy pallor disappeared in four days. Insufficient time has elapsed for evaluation of other evidences of correction of physiologic disturbances.

Immediately after the administration of 150 micrograms of biotin concentrate the urinary excretion rose rapidly from a deficiency level of 3 to 7 micrograms a day to a level approximating 55 micrograms. This level was maintained until the dose was increased to 300 micrograms a day, when there was a further step-wise increase in biotin excretion to a level approximating 140 to 150 micrograms daily with an immediate fall to a level slightly lower than those found in patients eating a normal diet when medication was discontinued. The excretion chart of patient 3 is typical of the patients observed.

SUMMARY AND CONCLUSIONS

In observations on human subjects maintained on a diet very poor in all vitamins of the B group except riboflavin supplied by egg white, supplemented with adequate amounts of available synthetic vitamins, in which at least 30 per cent of the total calories were supplied by desiccated egg white, definite symptoms and signs were produced.

Symptoms and signs were rapidly cured by the parenteral administration of a biotin concentrate in doses representing 150 to 300 micrograms of biotin per diem.

The phenomena observed were similar to some of those seen in spontaneous avitaminoses.

AGNOGENIC MYELOID METAPLASIA OF THE SPLEEN

REPORT OF FIVE CASES ILLUSTRATING DIAGNOSTIC DIFFICULTIES AND THE DANGER OF SPLE- NECTOMY AND RADIATION THERAPY

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The clinical picture of splenic enlargement with anemia has always been of great interest to the internist, the surgeon and the pathologist. This syndrome is observed from infancy up to old age and is associated with many different conditions, most of which are little understood although they are characterized by definite names. Thus we have only to enumerate such names as erythroblastosis fetalis, Cooley's anemia, chronic sub-leukemic myelogenous leukemia, splenic anemia and Hodgkin's disease. Each one brings to mind a rather definite clinical and pathologic picture, and yet there are many so-called atypical cases in which the disease defies classification both during life and after death of the patient.

In a recent report Jackson, Parker and Lemon¹ integrated as a clinical entity a syndrome characterized by splenic enlargement and the presence of immature red and white cells in the blood. This condition is often erroneously diagnosed as chronic myelogenous leukemia, splenic anemia, erythroblastosis or Hodgkin's disease. Frequently the picture is so confusing that a splenectomy is performed, with unfavorable results.

It is our purpose in this communication to cite briefly 5 additional cases of this disorder and to point out the diagnostic errors, both clinical and pathologic, which were made until the picture was finally clarified.

8. Biotin determinations were done by Dr. Isbell of the National Institute of Health.

9. Biotin concentrate was supplied by the S. M. A. Corporation, Chagrin Falls, Ohio

1. Jackson, Henry, Jr.; Parker, Frederic, Jr., and Lemon, H. M. *New England J. Med.* 222:985 (June 13) 1949

As a final check, our clinical and pathologic material was passed on by Jackson and Parker; so we are sure that we are dealing with the condition described by them.

REPORT OF CASES

CASE 1.—Y. J., a white man aged 52, an electrician, first admitted to the hospital on Jan. 14, 1935, had had ten teeth extracted six months prior to admission and afterward had noticed shortness of breath on mild exertion, generalized weakness and night sweats. The sweats were constant, occurring one or two hours after midnight every night. The weakness had become more severe during the last two months.

His past history included gonorrhea twenty years and a fracture of the ankle twenty-two years before admission; otherwise his general health had been good. The family history was irrelevant.

Physical examination showed that he was well developed and nourished but appeared chronically ill. There was no icterus. The skin was of fair turgor and gave evidence of some loss of weight. It had a peculiar, waxy, light yellow tinge. The mucous membranes of the mouth were pale. The heart showed a soft systolic murmur at the apex which was not transmitted. The spleen was greatly enlarged, extending medially to the umbilicus and 4 fingerbreadths below the umbilical line on the left. No axillary, cervical or inguinal adenopathy was noted. The remainder of the physical examination was negative.

On January 17 examination of the blood showed hemoglobin 46 per cent, red blood cells 2,500,000, white blood cells 7,600, mature polymorphonuclear leukocytes 69 per cent, band cells 5 per cent, young forms 2 per cent, lymphocytes 5 per cent, monocytes 9 per cent, myelocytes 6 per cent, promonocytes 2 per cent, eosinophils 1 per cent, basophils 1 per cent, reticulocytes 5 per cent and platelets 150,000. There were severe poikilocytosis and anisocytosis, and many nucleated red blood cells were seen.

The following day a sternal puncture was done which gave no evidence of leukemic infiltration. A fragility test of the red cells showed that hemolysis began in a 0.425 per cent salt solution and ended in a 0.350 per cent salt solution. The Wassermann reaction was negative.

A roentgenogram of the chest showed a cardiac shadow large in all diameters. The lungs showed no evidence of tuberculosis or metastases. A flat film of the abdomen showed a shadow in the left upper quadrant and gave evidence of slight enlargement of the liver.

It was felt that the patient might benefit by splenectomy, provided the hemoglobin level could be raised preoperatively by transfusion, since the removal of such a large spleen would probably cause a great blood loss. Accordingly, the patient received three transfusions of 500 cc. of blood at three day intervals. After the last transfusion he had a reaction, the temperature rising to 104.2 F. Hemoglobinuria was not noted. The liver became somewhat enlarged during the ten days. The preoperative hemoglobin content was 60 per cent and the red cell count 3,200,000.

On February 7 splenectomy was performed with the patient under spinal anesthesia. The preoperative diagnosis was a tentative one of Banti's disease. The patient withstood the procedure well. The spleen weighed 2,850 Gm. The serosa of the spleen was free from adhesions. The surface was for the most part mottled red and reddish brown. There were also some irregular, scattered, dark purplish areas and a number of contracted, linear, yellow areas. The largest of these areas measured 2.2 by 0.4 cm. and on section showed irregular, yellowish, contracted tissue about which were some purplish petechiae. This tissue was firmer than the surrounding splenic substance. On the lateral surface was an irregular, orange red, slightly raised area 3.5 by 1 cm. Section through this area showed orange red tissue which extended in an irregular pattern down about 3.5 cm. and was firm, granular and shiny. Other sections of the cut surface were granular, shiny and reddish brown.

Microscopically the spleen showed typical myeloid metaplasia with numerous megakaryocytes and hemochromatosis.

The patient lived five years after splenectomy. In that time he had more than twenty separate hospital admissions and

received more than fifty blood transfusions. His complaints were always essentially the same: dyspnea, weakness and night sweats. The last year before death dependent edema developed, and he eventually died from cardiac failure and terminal endocarditis.

Autopsy showed advanced osteosclerosis of all bones, particularly the femur, tibia and skull cap. Microscopically there were no changes indicative of leukemia in liver, kidney or marrow. The lymph nodes showed extreme infiltration with megakaryocytes without leukemic changes. There were extramedullary areas of hemopoiesis in liver and lymph nodes. There was also evidence of hemosiderosis in the pancreas and liver. The heart was enlarged and showed evidence of myocardial degeneration.

CASE 2.—T. F., a Russian woman aged 44, a dressmaker, was first admitted to the hospital on Oct. 14, 1938. Eight years before an enlarged spleen had been discovered during a routine examination for a "nervous breakdown." At that time she was in another hospital for one week, where the diagnosis of myelogenous leukemia was made. She was followed by the outpatient department for a number of years. No roentgen therapy was given because of a persistently low white cell count.

Since that time she had felt an increasing weight and sense of pressure in the left side of the abdomen. She had lost about 6 pounds (2.7 Kg.) in the last eight years. For the past two years her appetite had been poor and she practically always felt nauseated. Two and a half months before admission she had had a bout of vomiting with diarrhea following the ingestion of soft shelled crabs. She was seen by her physician, who sent her to another hospital for a transfusion, after which she felt better. She entered Lenox Hill Hospital after this for further study.

Her past history included diphtheria at the age of 15, with no sequelae, and a progressive scoliosis first noted at the age of 12, for which she was put in a plaster cast without any curative result. Her last menstrual period had been at the age of 43, a year prior to admission. She had been pregnant twice, once ten years and once eight years before admission. Both pregnancies were terminated for pernicious vomiting. The remainder of her past history was not significant. The family history was noncontributory save that two sisters had had "thyroid trouble."

Physical examination showed that the patient was poorly developed but fairly well nourished. The skin and mucous membranes were pale. The thyroid was somewhat enlarged along the lower margin, with a firm strip of tissue across the neck. No palpable cervical glands were present. The heart and lungs were normal. The thorax was asymmetrical. The spine showed scoliosis to the right, with the maximum curvature at about the fifth thoracic vertebra. There was moderate lordosis of the thoracic portion of the spine, with flaring of the right scapula. The entire left side of the abdomen was occupied by a smooth, firm, ovoid mass extending from the costal margin to below the iliac crest and from the midaxillary line to 3 cm. beyond the midline. There was moderate tenderness in the epigastrium medial to the mass and in the right upper quadrant. The edge of the liver and the kidneys were not palpable.

The hemoglobin content was 75 per cent, the red blood cell count 3,600,000 and the white cell count 13,800, with the following differential count: mature polymorphonuclear leukocytes 42 per cent, band cells 11 per cent, young forms 14 per cent, lymphocytes 22 per cent, monocytes 8 per cent, eosinophils 2 per cent and basophils 1 per cent. The red cells showed anisocytosis, poikilocytosis and polychromasia. There were 2 normoblasts per hundred white cells. Another differential count five days later showed 13 per cent myelocytes, 5 per cent myeloblasts and 2.7 per cent reticulocytes. Hemolysis of the red cells began in a 0.375 per cent solution, showing an increased fragility.

Roentgen examination of the chest showed scoliosis, but no mediastinal lymph node enlargement was seen. Roentgenograms of the long bones showed no osteosclerosis.

Since the diagnosis was doubtful and the presenting complaint was the discomfort caused by the spleen, peritoneoscopy

and a splenic biopsy were performed. These ruled out the possibility of leukemia or Hodgkin's disease but did not result in a definite diagnosis. The pathologic diagnosis from the biopsy was "probable neoplasm of the spleen." Accordingly, the patient was given a transfusion of 500 cc. of whole blood preoperatively, and on November 14 splenectomy was done, followed by a postoperative transfusion of 300 cc. She did fairly well and was discharged two weeks after splenectomy.

The spleen weighed 1,800 Gm. The surface was firm, gray red and glistening. On section there was a slightly increased resistance to the knife. Scattered over the cut surface there were many slightly raised, fairly well circumscribed, yellow red nodules measuring 0.3 to 1.2 cm. in diameter which were somewhat firmer than the surrounding tissue.

Microscopically the spleen showed myeloid metaplasia with many megakaryocytes, nucleated red blood cells, compression of the malpighian corpuscles, which were few in number, and but little fibrosis.

The patient has had five subsequent admissions since removal of her spleen:

From November 8 to November 16 the patient entered because of severe epistaxis which could not be controlled at home by packing. This subsided after conservative treatment and one transfusion. While she was in the ward, a vesicular eruption developed on an erythematous base over the left forearm and chest. Biopsy was done of material from one lesion, and the condition was diagnosed folliculitis cheloidalis.

From Jan. 5 to Jan. 20, 1940 the patient returned because of abdominal cramps and diarrhea. There was no evidence of any acute abdominal condition. The hemoglobin content was 60 per cent, the red cell count 2,500,000 and the white cell count 16,000. There were many nucleated red cells. A gastrointestinal series was done and showed no pathologic conditions. The patient was given one transfusion and discharged.

From May 20 to May 21 the red cell count was 1,800,000, the hemoglobin content 41 per cent and the white cell count 18,700. The patient entered this time for a transfusion. She had been well, except for nocturnal pain in the chest radiating through to the back and progressive fatigue since her last admission.

From July 26 to July 30 the patient entered again for transfusion, complaining of weakness and fatigue. Physical examination showed the liver to be enlarged to the umbilicus for the first time. The heart showed a loud, blowing systolic murmur and gallop rhythm. The gallop rhythm disappeared after two 500 cc. transfusions. The reflexes were generally hyperactive throughout, and there was a transient ankle clonus present. She was somewhat improved on discharge. On admission the blood showed hemoglobin 25 per cent, red cells 1,200,000 and white cells 13,200. The smear showed many normoblasts.

November 19 to November 23 the patient was well until ten days before admission, when she had a severe, persistent, unilateral headache and had become progressively weaker during the preceding seven days. The hemoglobin content was 20 per cent, the red cell count 1,100,000 and the white cell count 9,700, with many normoblasts present. The icterus index was 5.0. A roentgenogram showed no osteosclerosis at this time. The fragility test showed hemolysis beginning in a 0.375 per cent salt solution and completed in a 0.300 per cent salt solution. The patient was somewhat improved on discharge.

The patient was readmitted on Feb. 4, 1941 with weakness and severe anemia. The blood showed a hemoglobin content of 8 Gm., 2,200,000 red cells and 4,800 white cells, with 37 per cent neutrophils, of which 5 per cent were nonfilamented, 46 per cent lymphocytes, 16 per cent monocytes and 1 per cent basophils. Platelets were normal. There were 4 per cent nucleated red cells per hundred white cells.

The bone marrow showed fibrosis. The remaining marrow was normal in cellular constituents. The patient was given two transfusions of 500 cc. of whole blood and discharged improved.

CASE 3.—M. E., an Austrian woman aged 48, entered the hospital on Dec. 16, 1937 because of a progressive weight loss of 22 pounds (10 Kg.) during the preceding year, along with frequent watery stools, occasional tarry stools, and the inter-

mittent passage of worms varying in length from 1 to 2 inches (2 to 5 cm.). She had had moderate anorexia during the few months before admission. She had not consulted a physician for these symptoms.

Her past history revealed that catamenia had ceased a little more than a year previously, with only one episode of vaginal bleeding, lasting eight days and accompanied by pelvic discomfort, thirteen months before. Otherwise the past history and the family history were noncontributory.

Physical examination showed that the woman was chronically ill, with slightly jaundiced scleras. There was no lymphadenopathy. The heart had a loud systolic murmur best heard over the base, with a blood pressure of 128 systolic and 60 diastolic. The entire left side of the abdomen was filled by a firm mass extending to the level of the umbilicus. No nodules were felt. The liver was likewise enlarged in the region of the flank to the level of the umbilicus.

Examination of the peripheral blood revealed hemoglobin 80 per cent; the red blood cell count was 4,200,000 and the white cell count 10,800, of which the differential count was mature polymorphonuclear cells 81 per cent, band cells 6 per cent, lymphocytes 3 per cent and monocytes 10 per cent. Reticulocytes constituted 1.2 per cent. Among the red cells there were many poikilocytes and microcytes. The icteric index was 8. The bleeding and clotting times were normal. Splenic puncture was suggested, but it was refused by the family physician, who desired the patient to have roentgen treatment to the spleen to shrink it. This was done, but after thirteen treatments of 200 roentgens, high voltage therapy was discontinued because of a low white cell count of 1,700, with 76 per cent polymorphonuclear leukocytes, 22 per cent lymphocytes and 2 per cent eosinophils. At this time the patient was discharged home to convalesce without a diagnosis having been made.

About two weeks later, on Jan. 22, 1938, the patient was readmitted for further study and treatment. The spleen had become enlarged in the interim since discharge and now reached almost to the iliac crests. The blood showed hemoglobin 59 per cent, red cells 3,000,000 and white cells 2,150; the differential count showed 84 per cent polymorphonuclear leukocytes (9 per cent band cells), 14 per cent lymphocytes, 2 per cent monocytes and 1 nucleated red cell per hundred white cells. On February 14 a splenectomy was done, no definite diagnosis having been reached preoperatively. The patient was given postoperatively a transfusion of 500 cc. of whole blood, and her convalescence was smooth. A check-up examination done on May 26 showed hemoglobin 89 per cent, red cells 6,000,000 and white cells 66,000; the differential count showed 40 per cent polymorphonuclears, 19 per cent band cells, 25 per cent lymphocytes, 10 per cent monocytes, 5 per cent eosinophils and 3 per cent basophils. There were 18 nucleated red cells and 2 erythroblasts per hundred white cells, urea nitrogen was 14.5, creatinine 0.5, uric acid 4.4, sugar 78, carbon dioxide 48.1, cholesterol 184 (free 59, or 32 per cent, ester 25), and in the galactose tolerance test all specimens were negative for galactose.

The Wassermann reaction was 2 plus on December 21 and negative on December 24. Total protein was 6.92, albumin 4.64 and globulin 2.28. Examination of the urine gave negative results.

Grossly the spleen was smooth, glistening, dark red brown and firm. On section the cut surface was similar in appearance to the liver, being homogeneously dark red, streaked here and there with lines of gray tissue and prominent channels.

Microscopically the spleen showed fibrous thickening of the capsule, trabeculae and reticulum. The malpighian corpuscles were reduced in number. There were megakaryocytes, myelocytes, plasma cells, eosinophils and a few polymorphonuclear leukocytes. There were no infarcts. A tentative diagnosis of Hodgkin's disease was made.

The patient had two subsequent admissions, July 17 to 19 and Oct. 22 to Nov. 7, 1938, both because of severe epistaxis, uncontrollable by packing at home. Transfusion was not necessary.

She was followed in the outpatient department from Nov. 10, 1938 until the present time. On Nov. 23, 1938 it was noted that the patient had a perforated septum. She continued to have epistaxis, which was treated locally with epinephrine and a thromboplastic substance. On Oct. 19, 1939 the patient complained of considerable itching of the legs. Roentgen treatment to the liver was given because of the diagnosis of Hodgkin's disease and to relieve itching. On Feb. 8, 1940 the patient complained of soreness of the tongue and bruising easily. By March severe glossitis had developed. The patient was given 100 mg. of nicotinic acid three times daily and two tablets of ferrous sulfate twice daily. On October 10 both glossitis and itching were somewhat improved. The skin was bronzed at that time. The liver was still enlarged, and the hemoglobin content was 15 Gm.

The patient was last seen on June 5, 1941. She had lost considerable weight, the liver was much enlarged and the skin was deeply bronzed. The blood showed hemoglobin 16 Gm., red cells 5,200,000 and white cells 41,000; the differential count showed polymorphonuclear leukocytes 51 per cent, of which 26 per cent were nonfilamented, lymphocytes 4 per cent, eosinophils 16 per cent, basophils 2 per cent, myelocytes 13 per cent and myeloblasts 4 per cent. The polymorphonuclear cells showed toxic granulations, and many abnormal platelets were seen.

CASE 4.—D. M., a German housewife aged 55, admitted to the hospital on Jan. 2, 1940, had noticed a swelling of the upper left portion of the abdomen five years before admission. The swelling was painless except for burning in this region on exertion. She had noted onset of weakness also at this time. The swelling had increased in size, and the patient had sought medical aid three years before admission. Since then she had had periodic courses of roentgen therapy, with a resulting decrease in the size of the mass, increased strength and amelioration of pain. The last roentgen treatment had been in May 1939, and she had entered the hospital for splenectomy, which was advised by her physician. There was no history of weight loss or jaundice. For an indefinite period she had had dyspnea and palpitation on climbing two flights of stairs. The family and past histories were not significant.

Physical examination showed her to be somewhat pale and only moderately ill. The upper teeth were missing, and the thyroid was of moderate size. There were pinguiculae in the conjunctivas. The heart was moderately enlarged to the left. There was a rough reduplicated first sound heard loudest at the apex. The blood pressure was 185 systolic and 100 diastolic. There were many brown nevi on the skin of the abdomen. The flanks were bulging and were dull with a moderate fluid wave. The spleen was enlarged to 3 inches below the umbilicus. It was firm, smooth, nontender and movable. The liver was enlarged to 4 fingerbreadths below the right costal margin. There was also a tender, rounded bulge in the right costovertebral angle which seemed to be independent of the liver.

Laboratory studies showed the hemoglobin content to be 85 per cent, the red blood cell count 4,200,000 and the white cell count 7,500, with mature polymorphonuclear leukocytes 72 per cent, band cells 5 per cent, young forms 5 per cent, myelocytes 2 per cent, lymphocytes 6 per cent, monocytes 4 per cent, eosinophils 3 per cent and basophils 3 per cent. The red cells showed anisocytosis, poikilocytosis and basophilic stippling. A sternal puncture showed essentially normal marrow. The fragility test of the red cells showed normal resistance to saline solution. The bleeding and clotting times were normal.

Because of the mass in the right flank, intravenous urographic examination was performed, which showed bilateral diminished renal function. The pelvis and calices were only faintly visualized.

On the eighth day after admission, splenectomy was performed after a preoperative diagnosis of Banti's syndrome. A biopsy specimen of the liver was obtained at the same time. Postoperatively the patient was given a transfusion of 500 cc. of whole blood. Save for mild pyelitis caused by *Escherichia coli*,

which responded to sulfanilamide, the patient's convalescence was uneventful. She was discharged one month after operation.

Biopsy of the liver showed myeloid metaplasia. The weight of the spleen was 1,895 Gm. The capsule was thin and glistening, although in one area it was thickened and yellow gray. Several small nodules, of a consistency similar to that of the surrounding tissue, projected through the surface. On section the cut surface was smooth, firm, beefy and pink red, with fine streaks of gray white running through it. The follicles were not visualized. Large amounts of fluid blood ran from the cut surface.

Microscopically the spleen showed diffuse fibrosis and infiltration with small round cells, polymorphonuclear leukocytes, eosinophils and giant cells, these last being very numerous. The sinusoids were congested with blood. The malpighian corpuscles were absent.

Two months after discharge the patient reported that she had gained 10 pounds (4.5 Kg.) and felt well. She was seen again on June 9, five months postoperatively, at which time her general condition was good. She complained of pain around the stomach, and there was a large mass in the region of the liver, the nature of which was unknown. She was advised to enter the hospital for a check-up but did not do so.

On Jan. 29, 1941 the patient was readmitted to the hospital with swelling of the ankles. She was found to have cardiac enlargement with a mitral systolic murmur. The blood showed hemoglobin 13.5 Gm., red cells 4,200,000 and white cells 134,000, with 84 per cent polymorphonuclear neutrophil leukocytes, of which 57 per cent were nonfilamented, 6 per cent myelocytes, 7 per cent lymphocytes, 1 per cent monocytes and 2 per cent eosinophils and there were 6 nucleated red cells per hundred white cells. The sternal marrow showed fibrosis, otherwise hyperplasia of the remaining granular elements. She was given digitalis and discharged improved.

CASE 5.—M. T., a Negro aged 48, admitted to the City Hospital on Sept. 7, 1940, had been well until three months prior to admission, when dyspnea on exertion and a productive cough developed. The cough was associated with pain at the costovertebral angles. Two months before admission he noticed that both ankles were swollen. During the previous three weeks the dyspnea had increased gradually, so that at the time of admission he was unable to walk without discomfort. He did not complain of orthopnea or pain in the chest.

A family history was not given. He had had an attack of "rheumatism" twenty-four years before and had had nocturia, urinating two or three times a night, for an indefinite period. Otherwise his general health had been good until the onset of his present illness.

On physical examination the patient looked somewhat older than his stated age and was lying quietly in bed. The blood pressure was 124 systolic and 58 diastolic. The pupils reacted sluggishly to light. The mucous membranes were pale and the teeth carious. Examination of the heart and lungs gave negative results. On admission, neither the spleen nor the liver could be palpated. There was edema (3 plus) of the ankles. Rectal examination showed hemorrhoids. There was a questionable generalized cervical adenopathy.

About a week after admission the spleen became palpable and gradually increased in size until death. Two weeks after admission the liver was felt, and it gradually enlarged until it was 3 fingerbreadths below the costal margin.

Examination of the blood on the day of admission showed hemoglobin 25 per cent, red blood cells 1,600,000 and white cells 86,000, with 28 per cent polymorphonuclear leukocytes, 24 per cent stab cells, 4 per cent metamyelocytes, 20 per cent myelocytes, 3 per cent granuloblasts, 3 per cent progranulocytes A, 3 per cent eosinophils and 10 per cent lymphocytes. The red cells showed anisocytosis and poikilocytosis, together with some nucleation of red blood cells. A fragility test showed hemolysis of the red cells beginning in a 0.5 per cent salt solution and complete hemolysis in a 0.32 per cent salt solution. The icteric index varied between 16 and 35. On October 17 the reticulocyte count was 8.5 per cent. Gastric analysis showed no free

hydrochloric acid. The nonprotein nitrogen level was 30. A Wassermann test done at this time gave negative results.

Roentgen examination of the chest showed some scarring in the left apex. Examination of the bones showed no osteosclerosis. Retrograde pyelography and tests of the function of the kidneys gave evidence of bilateral chronic pyelonephritis and hydronephrosis.

Examination of the urine on repeated occasions showed the presence of erythrocytes and white cells but no casts.

The patient's course in the hospital was one of progressive asthenia, despite repeated transfusions which resulted only in slight improvement. Terminally, bilateral bronchopneumonia developed; he became irrational, had a urinous odor to his breath and died nine weeks after admission (five months after the onset of his illness).

Autopsy showed, in addition to lesions of myeloid metaplasia, acute and chronic pyelonephritis, acute bilateral bronchopneumonia and fibrinous pericarditis.

The spleen weighed 700 Gm. The capsule showed many areas of thickening, and the parenchyma was firm and fleshlike. The pulp could not be scraped at all. Microscopically it showed typical myeloid metaplasia and many megakaryocytes.

The liver and lymph nodes also showed many megakaryocytes. The bone marrow obtained was erythroblastic in type.

COMMENT

In not one of these cases was the diagnosis, either clinical or pathologic, correct. The clinical diagnoses were splenic anemia in 4 instances and leukemia in 1. The pathologic diagnosis of the condition of the excised spleen (the slides were sent to several reputable pathologists) was either atypical Hodgkin's disease or atypical leukemia.

On the strength of the clinical diagnosis splenectomy was performed, and because of the pathologic diagnosis radiation therapy was occasionally employed.

From a perusal of the case histories it is evident that both splenectomy and radiation therapy are harmful in this condition. The causes of the myeloid metaplasia are not known, but removal or depression of any of the foci seems to shorten the lives of the patients. This fact is illustrated not only in our cases but also in those of Jackson's series. He notes 2 cases in which death occurred shortly after irradiation. Three of his patients and 4 of ours did badly after splenectomy. Therefore, from a therapeutic point of view it is important to be on the lookout for this syndrome. It is easily confused with Banti's disease, hemolytic anemia, splenomegaly and atypical leukemia. Sternal puncture will rule out leukemia, since no leukemic infiltration has been observed in the marrow of these patients. Banti's disease and hemolytic anemia do not show both immature red and immature white cells in the peripheral blood. Normal red cell fragility and absence of spherocytes also distinguish agnogenic myeloid metaplasia from hemolytic anemia.

In dubious cases a prolonged period of observation is advisable, and, if necessary, a splenic biopsy can be taken through the peritoneoscope. The presence of myeloid metaplasia, many scattered foci of immature red and white blood cells and megakaryocytes definitely establishes the diagnosis of agnogenic myeloid metaplasia of the spleen.

CONCLUSIONS

1. Agnogenic myeloid metaplasia of the spleen is difficult to diagnose and must be differentiated from Banti's disease, hemolytic anemia and leukemia.

2. Splenectomy and irradiation are definitely contraindicated.

ETHER ANESTHESIA IN THE PRESENCE OF PULMONARY TUBERCULOSIS

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Great and sometimes dangerous efforts are made to avoid the use of ether anesthesia when surgery must be carried out on patients who happen to be suffering from tuberculosis; accordingly, it is important to examine the basis for the prejudice against the use of ether for tuberculous patients. As will be observed, this prejudice does not appear to be established on a secure foundation. We have therefore studied the results of using ether in operations on a carefully followed series of patients and have compared our results with those from other clinics.

Our wish to give ether an adequate trial was based on extensive observations, made in many general surgery clinics as well as our own, that ether is extraordinarily well tolerated by the cachectic patient and by the patient whose respiratory and circulatory systems may be grossly impaired.¹

CURRENT BASIS FOR THE PREJUDICE AGAINST THE USE OF ETHER FOR PATIENTS WITH PULMONARY TUBERCULOSIS

Where the prejudice against ether originated is not clear, but the current basis for it can be found in many published opinions over the past twenty or thirty years.² These articles vividly describe the dangerous consequences of using ether anesthesia for tuberculous patients: It is plainly a bad agent to use, or so it is said, for "ether will dissolve the lipid capsule surrounding the tubercle bacilli and allow them to be disseminated throughout the body." Liquid ether burns the skin, and so on; therefore "it must follow that the delicate mucosa of the airway will be dangerously irritated by the agent." (A considerable difference must exist in the effect produced by liquid ether and the concentration needed for full surgical anesthesia, namely 0.14 cc. of liquid ether per thousand cubic centi-

From the Anesthesia and Surgical Services of the Massachusetts General Hospital.

This is the third in a series of papers dealing with the problems of anesthesia for thoracic surgery: (Principles of Anesthesia for Lobectomy and Total Pneumonectomy, *Acta med. Scandinav.*, supp 90:146, 1938, and the paper referred to in footnote 3).

1. In addition to the use of ether in a large number of patients at the Massachusetts General Hospital, with nearly all kinds and degrees of heart disease, ether has been our choice for patients suffering from many forms of chronic pulmonary disease as emphysema, chronic bronchitis, chronic lung abscess, bronchiectasis and cancer. In the surgical treatment of these, ether has been employed as the anesthetic agent of choice in 65 total pneumonectomies and 222 lobectomies with unusually good end results.³

2. These include, together with others:

- Blumberg, N.: Ether Anesthesia and Tuberculosis with Report of Case. *M. J. & Rec.* 125: 462 (April) 1927.
- Eversole, U. H., and Overholt, R. H.: Anesthesia in Thoracic Surgery with Special Reference to Cyclopropane, *J. Thoracic Surg.* 5: 510 (June) 1936.
- Flemming, A. L.: Different Effects Produced by Exposing Tissues to Various Concentrations of Anesthetic Vapor, *Brit. M. J.* 2: 921 (Nov. 11) 1922.
- Freligh, E. B., and Ragino, O. B.: Ether in Tuberculosis, *Illinois M. J.* 56: 67 (July) 1929.
- Gwathmey, J. T.: Anesthesia, ed. 2, New York and London, Macmillan Company, 1925, p. 329.
- Magill, I. W.: Anesthesia for Thoracoplasty in Pulmonary Tuberculosis, *Lancet* 1: 295 (Feb. 8) 1930.
- McDonald, R. J. S.: The Effect of Anesthetics on the Lungs, *Brit. M. J.* 1: 61 (Jan. 13) 1923.
- Shelley, L. W.: Anesthesia in Thoracic Surgery, *Tubercle* 5: 13 (Oct.) 1923.
- Zuehlke, Ernst: Results of Ether Anesthesia on Suspected and Manifest Cases of Pulmonary Tuberculosis, *Am. J. Surg.* 24: 44 (anesthesia supp.) (April) 1920.
- Eastman, Grandy, Rogers.¹³

meters of air breathed.) Evidence that irritation from good ether anesthesia is probably not of morbid or mortal importance has been considered elsewhere.³ This probability receives outstanding support in the observations of King⁴ and others that an equal number of postoperative pulmonary complications are found in general surgery after ether, local or spinal anesthesia.

While opinions are divided at present concerning the advisability of using ether in operations on tuberculous patients, as shown in the following examples, there have been more to oppose than to approve or condone its use.⁵ Following correspondence with about one hundred anesthetists, surgeons and internists, Eastman⁶ found a great lack of unanimity of opinion as to the advisability of employing ether in the presence of pulmonary tuberculosis. Indeed, opinion varied from the conviction that ether would cure the tuberculosis to the belief that its use in operations on tuberculous patients is unqualifiedly foolhardy and, if administered to tuberculous patients, "sends them to their graves in less than six months." Unfortunately the statements of those questioned appeared to be made on the basis of memory and opinion rather than on a serious attempt to get at the facts through careful observation and record keeping.

Grandy⁷ presents a vigorous condemnation of ether administered by inhalation to patients with pulmonary tuberculosis, and then at once speaks approvingly of ether by rectum. He concluded with the remark "I shall give only these 2 cases [of active tuberculosis] but these are enough to prove [!] that ether administered by rectum is entirely different from ether by inhalation." Among those who permit ether to be considered at all, this attitude is quite common. It ignores, of course, the well established fact that ether is almost entirely (above 90 per cent) excreted through the lungs. The alveolar air at once comes into near equilibrium with the ether tension in the blood, so that throughout maintenance and recovery the lungs are exposed to ether at the same tension, except for the brief induction period, as they would have been if the ether had entered through them rather than through the rectum. When ether is administered rectally, the difficulty of correlating the dose with the desired depth may in some cases be responsible for needlessly high concentrations reaching the lungs and acting for a longer time than when ether is given by inhalation.

While many papers have been found which deal with the use of ether in the presence of pulmonary tuberculosis, no report of careful case studies has been found. The articles referred to, apparently chiefly based on casual memory and opinion, seem to be the basis for the widespread belief as expressed in standard textbooks that ether is contraindicated or to be used with the greatest reluctance in the presence of tuberculosis.

EXPERIMENTAL STUDIES OF THE PAST CONCERNING THE USE OF ETHER IN THE PRESENCE OF PULMONARY TUBERCULOSIS

It is interesting to observe that whereas severe condemnation of ether for the tuberculous is common in the papers based on opinion, the three objective attempts

to study the problem experimentally have come to quite another conclusion:

Corper⁸ observed that ether to the point of light anesthesia daily for about a month did not increase the susceptibility of guinea pigs to a virulent human tuberculous infection in comparison with controls.

Lawrason Brown and Petroff⁹ studied three groups of tuberculous guinea pigs. In each of the first two groups, 4 pigs were exposed to ether anesthesia and 4 used as controls. In the third group 3 pigs were used in each test and control group. In the first group, two weeks following infection, ether anesthesia was administered at weekly intervals for seven weeks. The etherized group lived longer than the controls. The second group was treated the same as the first except that anesthesia was administered every four days. The etherized and control animals lived the same length of time. In the third group anesthesia was administered daily for fifteen days, and then the animals were killed. The tuberculosis was equally extensive in the test and the control groups. They conclude that "ether anesthesia, whether prolonged or of short duration, whether light or profound, exerts on tuberculous guinea pigs no injurious effect as noted in length of life or extent of disease."

Rogers¹⁰ subjected 18 guinea pigs to tubercle bacillus infection; half received "complete ether anesthesia" daily for eleven days and half were used as controls. The duration (5 pigs) and extent (4 pigs) of the disease were identical in the two groups. He concluded that ether anesthesia has no effect on the disease process of tuberculosis.

Corper,⁸ Brown and Petroff⁹ and Rogers¹⁰ have all reported that repeated ether anesthesia in tuberculous animals does not result in a more rapid spread of the disease process. Rogers concludes that the "rapid spread of the disease [which] often followed operations on the tuberculous under ether anesthesia" is due to mechanical factors. He suggests that spread of the disease is due to "aspiration from the apical lesion, usually a cavity, to the larger areas of the lung substance, causing aspiration bronchopneumonia and after a few months death." Any factors such as labored respiration or excessive body movements aid in this aspirating process, according to him. He states further that "ether anesthesia not only causes labored respiration but increases the secretions diluting the infectious germ laden sputum and in this way causes a general spreading of the disease germs." He goes on to say that, "in the laboratory animal, the disease is anatomically different, inasmuch as the chronic ulcerative form is not present, but more of a solitary tubercle formation without ulceration, hence the aspirating of infectious material does not occur."

Whether or not Roger's explanation is correct, it is interesting that the only objective examinations made of this problem, the experimental studies, fail to provide any grounds for discrediting the employment of ether for the tuberculous patient. While the experimental studies leave much to be desired in their attack on the problem, it is probably true, as suggested by Rogers,

³ Beecher, H. K. Some Controversial Matters of Anesthesia for Thoracic Surgery, *J. Thoracic Surg.* 10:202 (Dec.) 1940.

⁴ King, D. S. Postoperative Pulmonary Complications. The Part Played by Anesthesia, *Anesth. & Analg.* 12:243-248 (Nov. Dec.) 1933.

⁵ Savage, W. E. The Treatment of Tuberculosis by Ether, *Ohio State M. J.* 14:480 (July) 1917; The Treatment of Tuberculous Peritonitis by Ether, *Anesth. & Analg.* 7:137 (May-June) 1928, and, with the exception of Rogers,¹⁰ the references cited in note 2.

⁶ Eastman, J. R. Anesthesia in the Tuberculous, *Am. Rev. Tuberc.* 9:276 (May) 1924.

⁷ Grandy, C. R. Ether Anesthesia in Cases of Pulmonary Tuberculosis, *Am. Rev. Tuberc.* 10:262 (Sept.) 1927.

⁸ Corper, H. J. Attempts to Reduce the Resistance of the Guinea Pig to Tuberculosis by Means of Various Agents (Including Ether and Chloroform), *Am. Rev. Tuberc.* 2:587 (Dec.) 1918.

⁹ Brown, Lawrason, and Petroff, S. A. The Influence of Anesthesia on Experimental Tuberculosis in Guinea Pigs, *Tr. Nat. A. Prev. Tuberc.* 15:292, 1919.

¹⁰ Rogers, J. B. Studies in Effects of Nitrous Oxide-Oxygen Anesthesia on Animals Infected with Tuberculosis Through the Respiratory Tract, *Am. J. Surg.* 35:44 (anesthesia supp.) (April) 1921.

that the tuberculosis process is sufficiently different in guinea pigs, ulcerative pulmonary lesions and cavities so rare in them, that the problem at hand cannot be settled by such an approach. With the possible exception of studies in monkeys it is questionable whether any animal experimental work would be of further

TABLE 1.—Type of Operation and Duration of Anesthesia in 147 Cases

Operations		Average Duration of Anesthesia *
First stage.....	139	2 hours and 8 minutes
Second stage.....	106	1 hour and 26 minutes
Third stage.....	15	1 hour and 22 minutes
Total.....	260	

* "Duration of anesthesia" was taken as the period from the beginning of induction until the operation was completed.

value in giving information on the problem at hand; certainly any attempts to get more help from animals would have to be very extensive. However, the three independent studies referred to, having arrived at a common conclusion, need not be passed by entirely. This negative evidence thrice obtained is of some value. Evidently the belief that the lipid solvent action of ether is a danger is on a less secure basis than has been supposed. It is apparent that, even in the highly susceptible guinea pig, ether anesthesia does not aggravate the disease process. This point at least can reasonably enter to a limited degree into our consideration.

While statements based on opinion appear to have served as the basis for the numerous strictures against ether in the tuberculous, so many men have been of this view that one cannot lightly dismiss their statements. A point worth noting here is that nearly all, if not all, of the statements referred to were based on open cone anesthesia, not modern, closed anesthesia. Surely open cone anesthesia is objectionable in these cases (and in many others) for several reasons: The vapors breathed are cold. One must deal not only with possible irritation due to the ether itself but also with that due to chilling the lungs. With less than expert cone administration of ether, the concentration of the agent breathed will at times be very much greater than needed and consequently more irritating than necessary. In the great majority of cases, cones are used in a manner that serves to increase considerably the dead space of the airway, with an objectionable elevation of the carbon dioxide tension and a lowering of the oxygen in the air breathed. Often the so-called open cone is nothing short of an asphyxiating tool.

With the simple modern equipment at hand, it is easy to avoid these difficulties encountered with the open cone. We believed that ether employed in modern closed anesthesia with the carbon dioxide absorption technic is worthy of trial and reevaluation in tuberculosis, for, as pointed out earlier, ether has many desirable qualities for the very sick. Ether administered in a closed system can hardly be compared with the agent when it is used by the open drop method.

Accordingly, we have carefully studied for a period of more than five years a series of patients who received "closed" ether anesthesia, notwithstanding their pulmonary tuberculosis. Our major purpose in this paper is to report that experience.

USE OF ETHER IN THE PRESENCE OF PULMONARY TUBERCULOSIS AT THE MASSACHUSETTS GENERAL HOSPITAL

We began to use ether routinely as the anesthesia of choice for thoracoplasty in patients with pulmonary tuberculosis in October 1935. This beginning was made under the direction of Dr. H. H. Bradshaw. The present study concerns consecutive patients treated from that date through 1940: 229 tuberculosis patients received ether anesthesia for four hundred and four thoracoplasties during this period. While the majority of the patients came from the Rutland Sanatorium, a number of other sanatoriums participated. Since more precise follow-up information was available concerning the Rutland patients, we decided to limit our study to this group: 147 patients who underwent two hundred and sixty thoracoplasties under ether anesthesia.

Details concerning choice of patient for thoracoplasty, surgical indications and procedures and similar material are recorded in a recent paper from this clinic by Adams and Dufault.¹¹ The routine premedication consists of morphine sulfate $\frac{1}{2}$ grain (0.01 Gm.) and atropine $\frac{1}{100}$ grain (0.00065 Gm.) administered subcutaneously one-half hour before operation. Frequently, soluble pentobarbital $1\frac{1}{2}$ grains (0.1 Gm.) is given by mouth one hour before operation. Patients are placed in position for operation before anesthesia is induced. During induction, care is taken to prevent straining and coughing. The choice of operating time is the afternoon, following elimination of the morning sputum. Anesthesia is administered by means of a closed system apparatus with carbon dioxide absorption (never open cone for these patients). Following a brief nitrous oxide-oxygen induction, with care to avoid anoxemia, ether anesthesia is administered with a high percentage of oxygen. Although intratracheal tubes are used with great frequency in this hospital and are always used in open pleura operations, we rarely use them in the presence of pulmonary tuberculosis. They are used in this case only when the sputum is unusually abundant. We are reluctant to use them in most cases of tuber-

TABLE 2.—Results * of Thoracoplasties (Including Tuberculous Empyema)

Patients	Number	Per Cent
Apparently cured.....	75+	50.5+
Arrested.....	11+	8.7+
Apparently arrested.....	24	1.6+
Quiescent.....	16	14.3
Unimproved.....	1	0.8
Worse.....	1	0.8
Dead.....	10	12.7
Early†.....	8	
Late.....	8	
Unknown.....	3	2.4
Total in this group.....	126	
Total well.....	85+	63.5+

The 21 patients operated on in 1940 have not been included in this and result table, since a one year follow-up is not adequate for indicating disposition; yet all of the operative complications as anoxia and shock, pneumonia and atelectasis as well as spread occurring in the 1940 patients have been included in the complications; see table 3.

* According to the National Tuberculosis Association's method of classification.

† That is, within the customarily stated but purely arbitrary two month period following operation.

culosis, for possibly new loci of tuberculous infection might develop in areas of slight trauma to the airway. During operation the patient is maintained in a slight Trendelenburg position.

With termination of the study reported here, at the end of December 1940, all patients will have been

11. Adams, Ralph, and Dufault, Paul: Surgery in Pulmonary Tuberculosis, J. Thoracic Surg. 11: 43 (Oct.) 1941.

followed for at least one year after their last anesthesia and operation. It would seem reasonable to suppose that damage possibly caused by the anesthesia would become evident within that time. The "end result" data of table 2 run only until the end of 1939; thus these patients have all been followed for at least two years.

It is unquestionably important in computing end result data in a study of this kind to consider the number of patients studied rather than the numbers of anesthetics and operations; nevertheless, in order to show distribution of type of operation, and frequency and duration of repeated anesthetics, the number of operations has occasionally been considered, as in table 1.

As shown by the study of Adams and Dufault¹¹ the patients coming from the Rutland Sanatorium to the Massachusetts General Hospital for treatment of their pulmonary tuberculosis gave the following distribution of conditions requiring surgery: cavernous disease, 87 per cent; pulmonary tuberculosis and tuberculous empyema, 5 per cent; pulmonary tuberculosis and mixed empyema, 5 per cent; unstable fibrotic disease without demonstrable cavitation, 3 per cent; early bronchial disease, 1 per cent. Our material deals with consecutive cases from the Rutland Sanatorium; those having tuberculous empyema as well as other unfavorable complications are of course included. The composition of the surgical teams changed frequently. The surgeons varied from members of the house staff to the chief of service.

TABLE 3.—*Postoperative Complications*

(Total number of patients, 147; total number of operations, 260)

Complications	Number	Per Cent Based on Number of Patients	Per Cent Based on Number of Operations
Anoxemia and shock.....	3	2.0	1.2
Pneumonia.....	4	2.7	1.5
	4	2.7	1.5
	5	3.4	
	3	2.0	

This table, based on the "early" complications (within two months), does not include wound infection (5 cases), late secondary wound hemorrhage (1 case) or torn pleura (1 case), since these are clearly unrelated to anesthesia, although these are all set down in the brief case summaries.

COMPLICATIONS AND DEATHS

Of the 147 patients (two hundred and sixty anesthetics and operations) the early complications and deaths are summarized here. This "early" group covers the customarily stated but purely arbitrary period of two months following operation. The "late" complications and deaths are subsequently grouped together.

EARLY

D. P. D., 1935. A man aged 24 died of ipsilateral, acute bronchiogenic spread of tuberculosis nineteen days after the third stage operation.

J. J. O'L., 1935. A man aged 20 died two days after first stage thoracoplasty and apicolysis of shock and anoxemia.

T. H., 1936. A man aged 30 died five weeks after first stage thoracoplasty of anoxemia, atelectasis, hemoptysis and ipsilateral spread of disease.

W. T., 1936. A man aged 26 developed bronchopneumonia two days after first stage thoracoplasty. This completely cleared within two months. After a second stage operation he is now well and working.

R. L., 1936. A man aged 36 was cyanotic following a first stage thoracoplasty. He was completely relieved by circulatory stimulants and oxygen. Surgical shock followed a second stage operation; this was combated successfully with intravenous saline solution.

S. P., 1937. A woman aged 36 died three days after a second first stage thoracoplasty with apicolysis (bilateral first stages and one second stage) of hemolytic streptococcus wound infection.

J. W., 1937. A man aged 46 developed bronchopneumonia four days after a second stage thoracoplasty; this cleared within three weeks.

R. K., 1937. A man aged 48 died five days after a second stage operation of shock and prolonged circulatory failure.

M. MacF., 1937. A woman aged 37 died five days after a third stage thoracoplasty of atelectasis and anoxia.

E. McC., 1937. A man aged 25 died eight days after a second stage thoracoplasty of wound infection.

A. P., 1938. A man aged 27 died one month after a third stage thoracoplasty of major hemorrhage in wound.

J. T. H., 1938. A man aged 46 showed ipsilateral spread of disease within three weeks of a first stage thoracoplasty. He died one year later of progression of the disease.

C. G., 1938. A man aged 41 developed atelectasis, after a first stage thoracoplasty, the day of operation. This persisted for six days, then cleared.

P. Q., 1938. A woman aged 37 with bilateral cavitation showed exacerbation of the process contralateral to operation within two weeks of a first stage thoracoplasty.

M. E. H., 1938. A woman aged 32 suffered a torn pleura during a second stage thoracoplasty with resulting pneumothorax.

G. C., 1938. A man aged 47 immediately after a first stage thoracoplasty developed bronchopneumonia which persisted for twenty-three days. This was followed by ipsilateral spread of the disease and death one year later.

W. E. G., 1938. A man aged 30 showed, twelve days after a first stage thoracoplasty, signs of a contralateral spread. These cleared in four months and a second stage operation was performed.

R. P., 1939. A man aged 41 with bilateral cavernous tuberculosis developed bilateral bronchopneumonia two days after a first stage thoracoplasty. This cleared in two weeks.

J. K., 1939. A man aged 23 had wound infection and ipsilateral spread within a week after a first stage thoracoplasty.

W. J. F., 1940.¹² A man aged 44 with bilateral tuberculosis showed major wound infection and contralateral spread of tuberculosis following a first stage thoracoplasty. Death was caused by the wound infection and progressive cavernous tuberculosis two months after operation.

R. U., 1940.¹² A man aged 34 developed atelectasis three days after a first stage thoracoplasty. The reaction required twenty-eight days to subside. Later a second stage operation was performed without unusual incident.

J. D., 1940.¹² A man aged 27 died thirteen days after a second stage operation, of wound infection.

LATE

G. B., 1935. A woman aged 26 died of progression of tuberculosis one year after a first stage thoracoplasty.

A. F. J., 1935. A man aged 36 died of progression of tuberculosis eight months after a first stage thoracoplasty.

J. F. O'C., 1936. A man aged 32 died of intestinal obstruction caused by tuberculosis two years after a second stage thoracoplasty.

M. F., 1937. A man aged 26 died of progression of pulmonary tuberculosis and extrapulmonary tuberculosis nine months after a third stage thoracoplasty.

J. W., 1938. A man aged 47 died of progression of his disease, six months after a second stage thoracoplasty.

J. T. H., 1938. (Included in preceding "early" group, which see, since it showed early spread of disease but was classified as a late death.)

G. C., 1938. (Included in preceding "early" group because of early complications. Classified as a late death.)

W. J., 1938. A man aged 31 died of progression of disease and wound infection eight months after a first stage thoracoplasty

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COMPARISON OF OUR RESULTS WITH THOSE
FROM VARIOUS CLINICS

In our series of 126 cases of thoracoplasty for tuberculosis from 1935 through 1939 under ether anesthesia there have been eight early deaths (6.3 per cent), that is, within the customarily stated but purely arbitrary period of two months after operation, and eight later deaths (6.3 per cent) for a total death rate of 12.7 per cent from tuberculosis in any form and from causes directly or indirectly connected with the operation; 59.5 per cent of the 126 cases are apparently cured, 8.7 per cent arrested, 1.6 per cent apparently arrested and 14.3 per cent quiescent.

Haight and Alexander¹³ reported a death rate of 5.6 per cent in 178 cases between 1934 and 1937 from causes directly or indirectly connected with operation,

TABLE 4.—Averages in Seven Groups of Cases *

Authors	Major Anesthetic Agent	Cases	Early Death Rate	Total Death Rate	Apparently Arrested and Apparently Cured
Aufses.....	Nitrous oxide.....	90	7.0	11.0	71.0
Diffenbach and Crecca	Evipal plus nitrous oxide	100	2.0	13.0	71.0
Finney.....	Early, avertin with amylene hydrate and nitrous oxide; recently, cyclopropane	104	5.7	18.2	62.5
Beecher and Adams	Ether.....	126	6.3	12.7	69.8 81.1†
Skinner et al.	Avertin with amylene hydrate and nitrous oxide; a few, cyclopropane	126	3.2	4.8	80.0
Haight and Alexander	Nitrous oxide.....	178	5.6	6.1	83.1
Meltzer.....	Local.....	181	1.6	4.4	63.4
Total patients.....		905			
Average (with standard deviations)		129	4.5±0.9	10.0±1.9	71.5± 3.0

* It is impossible to determine from some of these series whether or not patients having emphysema were included. The inclusion of emphysema cases interferes greatly with good average end result figures. All emphysema cases that we encountered in the consecutive cases studied were included in our data.

† If we include our quiescent cases here, as some writers appear to have done, 69.8 per cent becomes 81.1 per cent. It was not possible to break down the data from the several clinics presented here as they should be according to the National Tuberculosis Association classification; namely, as apparently cured, arrested, apparently arrested and quiescent. Our figures for these respective groups are shown in table 2.

and a total death rate of 6.1 per cent. In another group of 119 cases, probably including many of the foregoing, they had 83.1 per cent apparently arrested cases from two and one-half months to two years after operation. At the time these data were compiled, nitrous oxide was chiefly favored by Alexander as the anesthetic agent (pp. 443, 444, 448).

Skinner, Macpherson and Allen,¹⁴ report 3.2 per cent early deaths and 4.8 per cent total tuberculous deaths in a series of 126 cases from 1936 to 1940. The anesthesia which they used (personal communication) was avertin with amylene hydrate plus nitrous oxide in nearly all cases. Cyclopropane was used in a few cases.

Finney¹⁵ had an operative mortality of 5.7 per cent and a total mortality of 18.2 per cent in a group of 104 cases between 1932 and 1940, with arrest of disease in 42.3 per cent and apparent arrest in 20.2 per cent.

13. Alexander, John: The Collapse Therapy of Pulmonary Tuberculosis, Springfield, Ill., Charles C. Thomas, 1937, pp. 562, 564.

14. Skinner, G. F.; Macpherson, Lachlan, and Allen, Irene: Thoracoplasty for Tuberculosis, J. Thoracic Surg. 11: 54 (Oct.) 1941.

15. Finney, G. G.: Analysis of 104 Cases of Thoracoplasty for Pulmonary Tuberculosis, J. Thoracic Surg. 11: 76 (Oct.) 1941.

Avertin with amylene hydrate and nitrous oxide-oxygen were used in the earlier cases and cyclopropane in the later ones.

Meltzer,¹⁶ using local anesthesia exclusively, reported that he obtained arrest of disease in 32 per cent and apparent arrest in 31.4 per cent of 181 patients from 1936 to 1941, with an operative mortality of 1.6 per cent and a total mortality of 4.4 per cent.

Aufses¹⁷ had an operative death rate of 7 per cent and a total death rate of 11 per cent in 90 cases between 1935 and 1940, using nitrous oxide-oxygen, avertin with amylene hydrate and cyclopropane, and the disease of 71 per cent of his cases was arrested.

Diffenbach and Crecca,¹⁸ using evipal and nitrous oxide-oxygen, reported 100 cases in which operation was performed during the period 1936 to 1938, with an early mortality of 2 per cent, a total mortality of 13 per cent and arrest of disease in 71 per cent.

The averages for these seven groups of cases are shown in table 4. Except for the figures from Haight and Alexander, the data are the most recent published, representing the authors taking part in the Symposium on Results from Thoracoplasty at the twenty-fourth annual meeting of the American Association for Thoracic Surgery, Toronto, Canada, in June 1941.

It is apparent that the results in our cases have fallen near the average in the several categories. On the basis of these comparative data, no outstanding virtue can be claimed for one anesthetic agent nor particular hazard charged against another, as far as the results in these seven series go. Certainly it is true here as elsewhere that the anesthetist is of more importance than the anesthetic agent employed. To let one's conclusions rest here, however, implies a rather restricted view of the matter. It seems to be true that any one of two or three agents can safely be employed in the presence of pulmonary tuberculosis without aggravating this disease process. One might assume therefore that, if a well trained anesthetist is available, these two or three agents are all equally desirable. We doubt the validity of such an assumption, for it implies that the absolute death rate is the same for all of these agents. While it is admittedly difficult if not impossible to get precise information on this subject, enough evidence is available to indicate that wide differences exist between the death rates of the common anesthetic agents. Since this is the case it seems wiser to choose the agent which allows two important things: (1) the lowest death rate when large masses of data are considered, in other words jeopardizes the patient the least, and (2) permits the surgeon the greatest freedom. The low death rate of ether has been established in general surgery from its use in very sick patients in many hundreds of thousands of cases. The death rates of some other common general anesthetic agents appear to be at least twice as high as that of ether. In addition to these matters, the following should be considered: When the anesthesia is to be chosen for thoracoplasty, we believe it to be of great importance to choose ether, for on the basis of a considerable experience with patients who undergo all kinds of thoracic surgery it is our observation that many of the obvious as well as less apparent difficulties encountered during these operations are caused by reflex phenomena medi-

16. Meltzer, Herbert: Results of Thoracoplasty, J. Thoracic Surg. 11: 84 (Oct.) 1941.

17. Aufses, A. H.: Results in Ninety Consecutive Thoracoplasties for Pulmonary Tuberculosis, J. Thoracic Surg. 11: 98 (Oct.) 1941.

18. Diffenbach, R. H., and Crecca, A. D.: Analysis of 100 Consecutive Cases of Thoracoplasty with No Operative Mortality, J. Thoracic Surg. 11: 65 (Oct.) 1941.

ated through the vagi. The depression of vagal activity accomplished by ether is of real importance in thoracic surgery. We have reached this conclusion on the basis of data obtained in the clinic as well as in the anesthesia laboratory. In this regard ether exceeds in value all other agents studied to the present time.

Since the choice of closed ether anesthesia presents no hazard to the tuberculosis process, as far as we have been able to determine, it appears to us to be the best choice for the reasons that have been mentioned, for use in operations on patients who are suffering from tuberculosis whenever they require general anesthesia, whether this is for surgical treatment of pulmonary tuberculosis or for surgical treatment of other lesions.

SUMMARY

A prejudice exists against the use of ether anesthesia for operations on tuberculous patients. Where this originated is uncertain, but the current basis for it can be found in numerous published statements. On examination, these statements do not appear to be founded on study and careful record keeping; casual opinion appears to have served as the basis for many of the statements voiced against ether. Three groups of workers have in the past attacked the problem experimentally. Not one was able to substantiate the prejudice against the use of ether anesthesia for operations on the tuberculous. Most of the articles which apparently serve as the basis for the current prejudice against ether were written from one to three decades ago and were based on observations of "open cone" or "open drop" ether administration. It is probable that some of the secondary results of the use of this technique are undesirable in the presence of pulmonary tuberculosis as elsewhere.

Since the prejudice against the use of ether anesthesia for operations on the tuberculous does not appear to be based on a secure foundation and since, as far as we have been able to find, no extensive clinical study of this matter has been carried out, we have for more than five years been using closed ether anesthesia (with carbon dioxide absorption) in operations on consecutive patients undergoing surgical treatment of their pulmonary tuberculosis. Our data include all cases, favorable and unfavorable. The surgical teams were constantly changing, the surgeons varying from members of the house staff to the chief of service. Notwithstanding these facts, our results for more than five years are such as to compare favorably with those from other clinics where ether is used either not at all or rarely.

In our opinion, the anesthetic agent is not important in these cases as long as it permits the use of a plentiful supply of oxygen and allows the surgeon to carry out a deliberate, unhindered and unhurried operation, provided the patient is not jeopardized by toxic action of the anesthetic. It is important to choose an anesthetic agent which depresses vagal activity when thoracic surgery is contemplated. Ether excels other agents studied in this regard. While not enough data have been collected to permit final statement, several of the newer anesthetic agents appear to have a death rate in general surgery two or three times higher than is the case with ether. The excellent tolerance of the very sick patient for ether anesthesia as well as the low death rate attributable to this agent are well established. After five years of study we can see no reason to abandon the use of ether in operations on the tuberculous patient because of the presence of tuberculosis.

UNTOWARD EFFECTS OF PHENYTOIN SODIUM IN EPILEPSY

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Merritt and Putnam¹ found that while phenytoin sodium (sodium diphenyl hydantoinate, or dilantin sodium) was effective in protecting animals from electrically induced convulsions it produced little sedative effect. The effectiveness of this drug was then determined by them² in a group of 200 patients who had been having frequent convulsive seizures for many years and who had obtained little or no benefit from the usually accepted treatment. Certain toxic effects were observed, among them dermatitis, nonthrombopenic purpura, tremors, ataxia and dizziness.

Although Fetterman³ reported that phenytoin sodium had a high degree of therapeutic value, he observed disquieting side actions such as itching, a cutaneous rash, swelling of the gums, tremors and ataxia, blurring of vision, loss of taste and dysesthesia in the mouth, restlessness, insomnia, irritability, paranoid state, anorexia, gastric distress and loss of weight. A study of the table published by Fetterman shows that 23 of 28 patients, or 82 per cent, had some toxic effects. Epistaxis was mentioned by Frost⁴ as a complication. Kimball⁵ reported hyperplasia of the gums. Merritt and Putnam⁶ later mentioned diplopia with nystagmus, drowsiness, headache, psychotic reaction, hypertrophy of the gums and slight secondary anemia in a small percentage of patients. Blair, Bailey and McGregor⁷ reported the side effects of giddiness, tremor, ataxia, blurring of vision, slight nausea, delusions, hallucinations, prolonged confusion, clonic spasms, agitation, mental depression and reactivation of suicidal tendencies in an unspecified number of their 75 institutionalized patients treated with phenytoin sodium. Toxic reactions in some degree occurred in the majority (73 per cent) of Pratt's 52 cases.⁸ In addition to the usual side actions such as subjective tremulousness and a feeling of apprehension and tension, tremors, burning sensation in the eyes, blurring of vision, diplopia, dizziness, ataxia, nausea and vomiting, 5 patients had psychotic states. Blair⁹ reported a case of hemiplegia developing as a complication of treatment with phenytoin sodium. He¹⁰ later reported the results of treatment of 36 institutionalized patients with phenytoin sodium. Twenty-one, or 58.3 per cent, developed severe nervous toxic symptoms. Of particularly ominous nature seemed

From the Department of Nervous and Mental Diseases, Northwestern University Medical School, and the Minnie Frances Kielem Memorial Fund

1. Merritt, H. H., and Putnam, T. J. A New Series of Anticonvulsant Drugs Tested by Experiments on Animals. *Arch. Neurol. & Psychiat.* 39: 1003 (May) 1938.

2. Merritt, H. H., and Putnam, T. J. Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders. *J. A. M. A.* 111: 1068 (Sept. 17) 1938.

3. Fetterman, J. L. Dilantin Sodium Therapy in Epilepsy. *J. A. M. A.* 114: 396 (Feb. 3) 1940.

4. Frost, L. Sodium Diphenyl Hydantoinate in Treatment of Severe Cases of Epilepsy. *J. Ment. Sc.* 85: 976 (Sept.) 1939.

5. Kimball, O. P. The Treatment of Epilepsy with Sodium Diphenyl Hydantoinate. *J. A. M. A.* 112: 1244 (April 1) 1939.

6. Merritt, H. H., and Putnam, T. J. Sodium Diphenyl Hydantoinate in Treatment of Convulsive Seizures. Toxic Symptoms and Their Prevention. *Arch. Neurol. & Psychiat.* 42: 1053 (Dec.) 1939.

7. Blair, Donald, Bailey, K. C., and McGregor, J. S. Treatment of Epilepsy with Epanutin. *Lancet* 2: 363 (Aug. 12) 1939.

8. Pratt, C. H. Sodium Diphenyl Hydantoinate and Its Combination with Phenobarbital in the Treatment of Epilepsy. *J. Ment. Sc.* 85: 946 (Sept.) 1939.

9. Blair, Donald. Hemiplegia Complicating Sodium Diphenyl Hydantoinate Therapy in Epilepsy. *Lancet* 1: 269 (Feb. 10) 1940.

10. Blair, Donald. The Modern Treatment of Epilepsy. *J. Ment. Sc.* 86: 888 (Sept.) 1940.

psychosomatic delusions, revival of such psychotic symptoms as severe depressions and the like. Loss of weight was frequent, occurring in 15 out of 20 patients. Eosinophilia (between 4 and 12 per cent) occurred in a few cases and in 2 cases a reduction in red blood cells occurred. Pratt⁸ found a mild albuminuria in some cases. McCartan and Carson¹¹ reported that toxic symptoms developed in 40 per cent of their 20 cases. In some of their cases a decided twitching of the orbicularis oris preceded by two to three weeks the development of ataxia. In every case there was a slight, progressive diminution of the red cell count. There was a tendency to a lowering of the white cell count due to a fall of granulocytes. In 13 cases (65 per cent) there was a rise in the number of eosinophil cells.

Williamson¹² reported severe toxic effects of phenytoin sodium in mentally defective patients with epilepsy. He said that these toxic reactions were clinically identifiable with a state closely resembling nirvanol poisoning. Of the toxic reactions, Williamson noted widespread furunculosis in 1 case, edema of the face in 2 cases, an urticarial wheal along the mucocutaneous margin of the lips in 1 case and gingival hyperplasia with bleeding in 1. There was 1 case in which there was a persistently low blood urea and 2 cases in which there was hematuria. There were 4 deaths among the 20 patients treated, or a mortality of 20 per cent. In the cases terminating fatally oliguria was the rule. An intermittent temperature of 100 to 102 F. appeared late. In 1 case it rose to 106 F. forty-eight hours before death, while in other cases the terminal temperature was subnormal. Death was due to bronchopneumonia in 1 case and to status epilepticus in 3. Status epilepticus set in in the 3 cases after phenytoin sodium therapy had been administered for one-half month, one-half month and two and one-half months respectively. In 1 case the treatment was discontinued after three months because a tendency to status epilepticus began.

Williams¹³ reported that 2 patients died in status epilepticus while on phenytoin sodium and bromides. Phenytoin sodium had at first obviously had a good therapeutic effect, yet status epilepticus later developed while the patients were under full treatment with the drug. Status developed in 1 case after a remission of five weeks while on treatment and in the other after a remission of two months while on treatment. He also found that toxic symptoms arose in 36 per cent of his 83 patients. The toxic complications involving the nervous system included bifrontal headaches, lethargy, bilateral ptosis, blurring of vision, diplopia, ataxia, tremor and nystagmus in all directions. Behavior disturbances also occurred which might be attributed to the toxic effects of phenytoin sodium.

Blair¹⁰ reported 4 deaths but could not definitely prove the association of death to the use of phenytoin sodium. In 1 case phenytoin sodium was withdrawn long before death. One death was due to cardiac involvement in a patient with known cardiovascular disease. In the other 2 cases, however, postmortem examination showed myocardial damage, and we believe that phenytoin sodium had a toxic influence on the myocardium leading to a fatal termination.

Blair¹⁰ also noted in 4 cases a noticeable exacerbation of spells following a long period free from spells

due to phenytoin sodium therapy. An increase of phenytoin sodium dosage led to an increase of seizures. Reduction of the dose led to a reduction of the seizures.

Coope and Burrows¹⁴ had 2 fatalities due to bronchopneumonia following an acute exacerbation of seizures: a woman aged 31 had a series of six severe major attacks after three weeks on phenytoin sodium therapy and three seizures the next day. Phenytoin sodium was discontinued and she was given bromides, a chloral derivative and phenobarbital, but she had fifteen attacks the following day. Three days later she died of bronchopneumonia. The other patient who died was a youth aged 18 who after two weeks on phenytoin sodium therapy had two seizures. After two more weeks he had two, four and nineteen spells on successive days, his temperature rose to 105 F. and he died of a disseminated bronchopneumonia.

Kimball and Horan¹⁵ reported repeated attacks of gastrointestinal irritability together with unusual hyperplasia of the gums. Mandelbaum and Kane¹⁶ reported a case in which there was pyrexia, dermatitis exfoliativa and considerable enlargement of the liver and spleen. The serum phosphatase value was found to be increased to 15.4 mg. per hundred cubic centimeters. Phenytoin sodium was given in 1½ grain (0.1 Gm.) capsules two or three times a day. The rash was first noted after thirty-nine capsules had been taken and the more severe toxic effects occurred after seventy-nine capsules had been ingested.

Aring and Rosenbaum¹⁷ reported that a young man on three occasions ingested 60, 90½ and 105 grains (4, 6 and 7 Gm.) of phenytoin sodium over a period of minutes, six hours and ten hours respectively. The chief resulting symptoms were exhilaration, light headedness, dizziness, nausea and vomiting, headache, staggering, diplopia, nystagmus, difficulty in converging the eyes, pupillary abnormalities, ataxia, tremor and changes in reflexes. Of all these signs, nystagmus persisted the longest and was present for eight days on the last occasion.

OUR OBSERVATIONS

Forty-four patients with epilepsy who had previously been treated with bromides or phenobarbital for at least six months were each given from 0.3 to 0.6 Gm. of phenytoin sodium daily. Four of these patients were from the private practice of Dr. L. J. Pollock. The remainder were from the Epilepsy Clinic of Northwestern University Medical School. Phenytoin sodium was administered according to the method advised by Merritt and Putnam. The previous medication was gradually withdrawn as phenytoin sodium was overlapped and finally substituted. Treatment was begun on 20 patients in April 1939. As patients were found suitable for this treatment they were added shortly after that date until a total of 44 was reached. However, at the present time only 7 patients remain on active treatment with phenytoin sodium.

The reasons for discontinuing the medication after varying lengths of time from two weeks to several months were as follows: It was discontinued in 3 cases because of an increased frequency of spells, in 6 because of a severe ataxia, in 1 because of a severe gastrointestinal disorder, in 7 because there was no reduction in the number of seizures, in 4 because psychotic

11. McCartan, W., and Carson, J.: The Uses of Sodium Diphenyl Hydantoinate, *J. Ment. Sc.* 85: 965 (Sept.) 1939.

12. Williamson, B. A. M.: Severe Toxic Effects of Sodium Diphenyl Hydantoinate in Mentally Defective Epileptics, *J. Ment. Sc.* 86: 981 (Sept.) 1940.

13. Williams, Denis: Treatment of Epilepsy with Sodium Diphenyl Hydantoinate, *Lancet* 2: 678 (Sept. 23) 1939.

14. Coope, Robert, and Burrows, R. G. R.: Treatment of Epilepsy with Sodium Diphenyl Hydantoinate, *Lancet* 1: 490 (March 16) 1940.

15. Kimball, O. P., and Horan, T. N.: The Use of Dilantin in the Treatment of Epilepsy, *Ann. Int. Med.* 13: 787 (Nov.) 1939.

16. Mandelbaum, Harry, and Kane, L. J.: Dilantin Poisoning, *Arch. Neurol. & Psychiat.* 45: 769 (May) 1941.

17. Aring, C. D., and Rosenbaum, Milton: Ingestion of Large Doses of Dilantin Sodium, *Arch. Neurol. & Psychiat.* 45: 265 (Feb.) 1941.

behavior developed, in 4 because of the development of an encephalopathy, in 3 because there were electrocardiographic changes and subjective complaints of precordial distress, in 5 because of irritability and apprehensiveness and the refusal of treatment and in 1 because of the development of peripheral neuritis.

TOXIC EFFECTS

The most alarming side effects were those involving the nervous system. The gastrointestinal tract, the cardiovascular system, the skin and formed elements of the blood also exhibited evidence of deleterious effects of phenytoin sodium. Each patient presented more than one symptom of a disquieting side effect involving various organs.

Ataxia, tremor and nystagmus were the most frequent symptoms reflecting toxic action on the nervous system. The ataxia was of the cerebellar type and the Babinski-Weil sign was frequently elicited. Many of the patients were irritable and apprehensive and said they were "jittery." The most serious complication was the development of an encephalopathy or a psychosis necessitating institutionalization. An encephalopathy occurred in 4 cases. A loss of weight in our experience was an indication of the development of toxic symptoms leading to an encephalopathy. One patient aged 15 who had a remission for six months while on phenytoin sodium therapy began losing weight gradually for a period of four months, although she said that she was eating too much. Her attention was wavering for several weeks and then she became somnolent. She had no subjective complaints but she walked slowly and stared as though in a trance. Then she complained of dizziness and mild nausea. She became very sleepy, mumbled to herself and was very unsteady in gait. Nystagmus was present laterally and vertically. A positive Babinski-Weil reaction was elicited. There was considerable swaying during the Romberg test. There was a facial weakness on the right side, hyperactive deep reflexes, absent superficial abdominal reflexes and no pathologic reflexes. She answered to questions only with yes or no very slowly. She became semistuporous.

This type of encephalopathy had developed in 4 cases. The psychotic behavior that occurred in 6 cases was characterized by a confusional paranoid state with significant irritability.

There were 2 children who had tantrums of temper consisting of stamping on the floor, walking around in circles and throwing themselves on the floor while on treatment. This behavior had not occurred on previous medication and their behavior may have been due to the toxic effects of phenytoin sodium. Other side effects involving the nervous system were vertigo and dizziness, paresthesias, peripheral neuritis (1 patient), headache, visual disturbances including blurring of vision and diplopia, insomnia, somnolence and general weakness.

Two of the patients developed status epilepticus, 1 after four weeks on phenytoin sodium 0.4 Gm. daily and the other after a week of treatment with 0.3 Gm. daily and phenobarbital 2¼ grains (0.15 Gm.) daily. Five patients had an increase in the frequency of spells. Others have reported, as already mentioned, status epilepticus as a complication of phenytoin sodium. It is possible that one of the toxic effects of phenytoin sodium is an increase in the frequency of seizures and status epilepticus.

The heart was studied also by electrocardiography because some of the patients complained of precordial

distress. Twenty-seven patients were studied by serial electrocardiograms. All but 2 showed definite changes on a maximal dose of phenytoin sodium for each patient. Thirteen, or approximately 50 per cent, showed prolongation of the PR interval of from two hundredths to four hundredths second. Twenty-one, or 78 per cent, showed a decrease in the amplitude of the T wave. In 3 cases there were P wave changes and in 1 case there was a significant alteration of the QRS complex. In all cases, after the drug was discontinued, the electrocardiographic pattern returned toward the normal for each patient. For example, in 1 patient an electrocardiogram taken six weeks after the beginning of treatment showed evidence of a heart block. This patient complained of precordial oppression. Successive electrocardiograms showed an increase in the PR interval and he continued to complain of precordial distress.

Toxic Effects of Phenytoin Sodium Analyzed According to the Various Organs Involved

	Number of Patients
Nervous system	
Psychosis.....	6
Ataxia.....	17
	18
	4
	21
	5
	1
	2
	10
	5
Somnolence.....	1
Weakness.....	6
Tremor.....	15
Status epilepticus.....	2
Encephalopathy.....	4
Behavior disturbances.....	2
Cardiovascular system	
Electrocardiographic changes.....	32
Subjective complaints (precordial distress).....	5
Edema of legs.....	1
Gastrointestinal system	
Nausea and vomiting.....	13
	3
	2
	11
	17
Skin	
Scarlatiniform rash with fever.....	1
Rash and pruritus.....	6
Urine	
Albuminuria.....	6
Blood	
Secondary anemia.....	3
	9
	4
	10

Phenytoin sodium was discontinued and the electrocardiograph was normal after a few months. Seven more patients not studied serially showed on the electrocardiograph a prolongation of the PR interval. One patient had edema of the legs.

The report by Williamson¹² of cardiac involvement as a result of treatment with phenytoin sodium is relevant in connection with the electrocardiographic changes that we have found. Three of his patients who had no history of cardiac or renal disease did have changes in the cardiac rate during the time that other toxic signs were present. One patient aged 20 had a simple bradycardia of 52 beats a minute three months after beginning treatment. Another, aged 58, had a bradycardia of 44 beats a minute with very frequent ventricular extrasystoles five weeks after starting treatment with phenytoin sodium. The patient complained of weakness, breathlessness and swelling of the ankles and showed cardiac dilatation, inversion of the T wave and clinical signs of cardiac insufficiency. The third patient had paroxysmal tachycardia which may merely have been coincidental and not due to treatment.

The other side effects due to phenytoin sodium as given in the table have at one time or another been reported by others, as mentioned in the survey of the literature. Although nausea and vomiting was quite frequent and may have been due to gastric irritability caused by the drug, the toxic effects as observed in 1 case simulating an acute abdominal condition is a more serious complication. The patient was a girl aged 19 who was given phenytoin sodium overlapping and substituting phenobarbital. When the dose of phenytoin sodium reached 0.6 Gm. a day a generalized weakness, severe abdominal pain, nausea and vomiting developed. There was no fever and the leukocyte count was normal. Phenytoin sodium was discontinued for a week and the symptoms disappeared. When treatment with phenytoin sodium was resumed the patient experienced the same symptoms within a week. She again recovered when phenytoin sodium was discontinued. When treatment with phenytoin sodium was begun a third time and she again had severe gastrointestinal symptoms she refused to take any more of the drug.

The loss of weight mentioned by others was also observed in some of our cases. The weight loss ranged from 1 to 22 pounds (450 Gm. to 9.1 Kg.). Fourteen patients lost weight, 11 gained and the others maintained the weight they had before treatment. Seventeen patients had a gingival hyperplasia, a condition first reported by Kimball.⁵

The only significant change noted in blood chemistry studies was an increase in the serum phosphatase. The phosphatase value after various periods of treatment ranged from 7.92 to 18.59 mg. per hundred cubic centimeters. The average value was 10.77. This is of interest in relation to hepatic involvement, since Mandelbaum and Kane¹⁰ reported a case in which there was enlargement of the liver and spleen with an increase in serum phosphatase.

Seven patients are still on treatment with phenytoin sodium. These patients were continued on treatment because phenytoin sodium definitely exerted favorable influences on their seizures. These patients also had side effects from phenytoin sodium but not sufficiently serious to indicate cessation of phenytoin sodium since the side effects were offset by the remissions caused by phenytoin sodium. These patients had the complications mentioned in the table, but at the present time, more than two years after treatment, they are for the most part free of them.

Of the 7 patients still on treatment with phenytoin sodium, 6 have had remissions from seizures of from ten to seventeen months and 1 is free from seizures for periods of about two months. Previously these patients had not responded favorably to bromides, to phenobarbital or to both.

SUMMARY

Forty-one patients with epilepsy were treated with phenytoin sodium according to the method of Merritt and Putnam. All the patients showed some side effect of the drug, ranging from apprehensiveness and irritability, present in 21 patients, to the development of an encephalopathy, in 4 patients. Side effects involved chiefly the nervous system and ataxia, vertigo, blurring of vision, nystagmus, tremors, insomnia and somnolence occurred. Status epilepticus, a paranoid confusional psychosis and encephalopathy were observed.

Of particular interest in relation to the cardiovascular system was electrocardiographic evidence of involvement of the heart. There were also toxic effects on the gastrointestinal system and the skin.

303 East Chicago Avenue.

Clinical Notes, Suggestions and New Instruments

FAMILIAL HEREDITARY EDEMA

MILROY'S DISEASE

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The occurrence of familial hereditary edema, also known as Milroy's disease, hereditary trophedema and hereditary or congenital elephantiasis, is rare, particularly when a continued familial incidence can be demonstrated. Search of the literature reveals that fewer than fifty families with this hereditary syndrome have been reported. The following case is presented because such reports are rare and because of the studies, manifestations and improvement on treatment.

REPORT OF CASE

A. W. S., a white man, aged 25, unmarried, a selectee in the United States Army, was admitted to the Station Hospital, Camp Callan, California, Aug. 4, 1941 because of pain, swelling and mottled redness of the right foot. In civilian life he had been a painter. His home was in the Middle West. Since his induction in the army seven weeks prior to entering the hospital, he had been engaged in the usual training and drilling on the camp grounds. He stated that there had been some degree of pitting and swelling of the right foot as long as he could remember. His mother had told him that this had started when he was about a year old, or about the time he might have been expected to start walking. The condition has always been confined to the right foot. It has given him varying degrees of distress from none at all to the condition present on hospitalization. Symptoms have always been more severe during the summer months. Activity has little effect except that when he is on his feet a great deal the swelling is a little more noticeable. This clears somewhat when he is at rest with the foot elevated, but he is never without some slight degree of swelling. The foot has never been frostbitten or injured, nor has the skin ever blistered. He has never had an infection of the leg or abdomen. The patient has been a heavy smoker all his adult life, but there is no correlation between the amount of his smoking and the swelling of the foot.

The patient has had numerous and varied treatments in civilian life without relief of the condition. When the swelling is at its maximum or when acute episodes of redness and pain occur he experiences a sensation of shooting pain going up and down the bone between the ankle and the knee.

The patient was cooperative and intelligent. He stated that he had never had any serious illness and that he had had no venereal disease of any type. His only operation was a hernioplasty on the left side in 1930. His height was 65½ inches (168 cm.) and his weight 138 pounds (62.6 Kg.); his temperature peak was 100.6 F., pulse peak 100 on the day of entry and blood pressure 130 systolic and 85 diastolic. Physical examination was essentially negative except for premature baldness of the crown of the head, a well healed, freely movable inguinal scar on the left side and hot, red swelling of the right foot over the dorsum and sides from the ankle to but not including the toes, although the toes were slightly swollen. There were small petechial hemorrhages on the lateral aspect of the foot but nowhere else. The foot was moderately tender to deep pressure, and active motion was fair. There was no lymphangitis and no adenopathy.

Roentgen examination of the foot was reported by Lieutenant Sachs, roentgenologist, as follows: "The bones of the right ankle joint are within normal limits. Soft tissue studies of the ankle reveal a soft tissue swelling. There is no evidence of calcification of the soft tissue" (fig. 2).

Urinalysis was essentially negative; the blood Kahn reaction was negative. A blood count revealed the hemoglobin level

From the Coast Artillery Replacement Center, Station Hospital.

80 per cent, erythrocytes 3,850,000, leukocytes 9,050 with 76 per cent polymorphonuclear neutrophils. The blood sedimentation rate was 46 mm. (normal 5 to 10 mm.) and the blood uric acid content 3.5 mg. per hundred cubic centimeters.

Treatment consisting of administration of sulfathiazole and elevation of the foot was instituted and continued for one week. On the fourth day the temperature, which had remained at 99 to 100 F., returned to normal and continued at that level thereafter. At that time the redness of the foot had cleared and the pain had greatly diminished. On the fifth day of hospitalization the blood sedimentation rate was 30 mm., with the blood count approximately as before. The swelling of the foot persisted unchanged, however, and he was transferred to a medical ward. At the end of his second week in the hospital the cellulitis and the cutaneous irritation were completely cleared, but the swelling of the foot and ankle remained about the same. Examination of scrapings of the skin of the foot and between the toes failed to reveal any evidence of mycotic infection. Repeated urinalyses remained essentially negative. Blood counts were normal except for the persistent, moderately low erythrocyte and hemoglobin determinations. He continued to have occasional aching pain in the leg, but this was intermittent and slight, and he was ambulatory. Bed rest with elevation made little impression on the swelling, which was now firm but not brawny, pitted on pressure, was not tender and extended to a point about half way to the knee. The skin was now smooth, warm, of normal color and somewhat thickened. Both dorsalis pedis arteries pulsated normally.

On August 23, the twentieth hospital day, because of the persistent swelling and the important revelation of the foot swelling since infancy, familial hereditary edema was suspected and the patient questioned closely about hereditary factors. In regard to these, he was positive about the following: His maternal grandfather had the same type of swelling, confined to the left foot, with onset known to have occurred at the age of 16 years; his maternal great grandfather was said to have had the same condition, and the patient's mother has had unexplained swelling of both her legs since the age of 28. His grandfather had thirteen siblings, none of whom had a similar condition; his mother had three sisters, all of whom died in infancy, and two brothers who have no evidence of a similar condition. The patient had one brother and one sister who did not have a similar condition. The manifestations and history were deemed sufficient to establish a diagnosis of familial hereditary edema especially after further studies to exclude other conditions were made.

The sedimentation rate was now a normal 11 mm., the stool was found clear of pathogenic parasites and the total serum

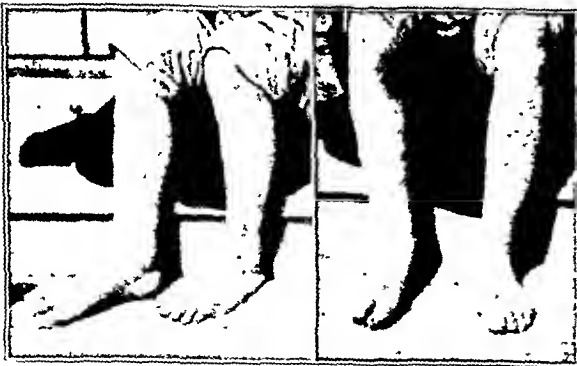


Fig. 1.—Patient's legs just previous to mercupurin therapy, showing the swelling of the right foot.

protein was 6.9 mg. per hundred cubic centimeters. Roentgenograms of the chest, the pelvis and hip joints revealed a normal appearance. The blood pressure in the legs with the systolic determined by palpation of the first pulsation in the dorsalis pedis arteries was 168 in the left leg and 138 in the right leg. The venous pressure in the right leg was 10.5 cm.,

and at the same midcalf level in the left it was 9 cm. The circulation time from the midcalf of the left leg to the tongue, with the use of decholin, was ten seconds and of the right leg twenty seconds. The left leg-tongue time was determined first and, although a time lapse was allowed with the patient



Fig. 2.—Front and side view of the patient's right ankle and foot.

continuing at absolute rest, the difference in the circulation times was probably partially due to a dulled taste perception for the agent used.

On September 16, thirty-nine days after the redness and evidence of cellulitis had cleared, the comparative circumferences of the legs were, at the malleoli: right leg 12¼ inches (31.5 cm.), left 10 inches (25 cm.) at a level 3 inches (7.6 cm.) above the malleoli: right 9½ inches (24.5 cm.), left 8½ inches (22 cm.), the left leg having been, of course, of normal appearance throughout the period of observation. Above these levels the two legs were of the same circumference (fig. 1).

On September 17, the forty-fourth hospital day, because the swelling remained the same despite long periods of bed rest and because the patient still had intermittent aching of the leg, 2 cc. of mercupurin was administered intravenously. During twenty-four hours the patient had a fairly good diuresis, which it was impossible to measure accurately because the patient had to be out of the hospital part of the day, and his weight dropped from 136 to 133 pounds (61.7 to 60.3 Kg.). The right ankle and foot were definitely less swollen, the measurements now having decreased to 11 inches (28 cm.) in circumference at the malleoli and 8¾ inches (23 cm.) at a level 3 inches above the malleoli. With the reduction of the swelling of the foot, the intermittent distress in the foot cleared entirely.

Within the week he was discharged from the hospital in continued excellent general condition and was discharged from the army to his home by a Certificate of Disability Discharge. He was advised either to have mercupurin therapy whenever the leg caused distress or to try other suggested long term therapy under the supervision of a private physician. He reported by mail on October 13 that he continues to be in good general health and has no distress whatever in the leg, although some swelling persists.

SUMMARY AND CONCLUSIONS

1. A case of familial hereditary edema with a maternal family incidence in four generations has been reported because of the rarity of the condition described and because of the studies and observations made.

2. The case is further unusual because it is generally regarded that this type, the congenital as differentiated from the acquired,

which occurs later in life, does not present the acute pain and inflammatory episodes which this patient suffers.

3. The use of mercupurin to relieve the swelling gave complete relief from intermittent aching pain, which thereby is apparently demonstrated to be due to the swelling and not intrinsic with the syndrome.

PSITTACOSIS

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Psittacosis, a highly communicable disease, has been transmitted to man by parrots, parakeets, love birds and rarer birds of the parrot family.

This communication is of interest because it presents an isolated case of psittacosis in which the only exposure to a bird was to the common pigeon; this possible source of infection warrants closer investigation.

REPORT OF CASE

L. M., a white man aged 35, born in the United States, a policeman, collapsed suddenly while on duty on Oct. 8, 1941. I saw him a few hours later, at which time he complained of fatigue, pain in the left lower portion of the chest extending from the axilla to the precordium, slight cough and blood tinged sputum. He also stated that he had had chills and fever and a "grippy" feeling for two or three days.

The past history showed no previous illness or operation. He was given sulfathiazole, and for the next six days the temperature varied from 100 to 103 F. The pulse rate was 70 to 80 and the heart sounds were distant and of poor quality.

On October 15 the pain in the chest became severe and the temperature rose to 104.5 F. The patient was flushed and the membranes were cyanotic; he was admitted to the Bay Ridge Hospital.

A roentgenogram made on admission revealed that the lung roots were clouded by central pneumonitis, and there was an exudative spread of this process into the lower lobe of the right lung. The heart appeared grossly enlarged to the left. The impression was that of influenzal pneumonia and mitral valvular disease. The heart sounds were weak at the apex, and the P wave in lead 2 was accentuated.

Examination of the blood on October 16 showed hemoglobin 96 per cent, erythrocytes 4,850,000, leukocytes 16,400, polymorphonuclear leukocytes 76 per cent, small lymphocytes 20 per cent, large mononuclear cells 3 per cent and eosinophils 1 per cent. On October 18 the blood showed hemoglobin 97 per cent, erythrocytes 4,950,000, leukocytes 17,650, polymorphonuclear leukocytes 70 per cent, small lymphocytes 22 per cent, large mononuclear cells 5 per cent and basophils 1 per cent. On October 20 the blood showed hemoglobin 84 per cent, erythrocytes 4,350,000, leukocytes 26,900, polymorphonuclear leukocytes 91 per cent, small lymphocytes 8 per cent and large mononuclear cells 1 per cent. The blood count on October 24 was hemoglobin 80 per cent, erythrocytes 4,480,000, leukocytes 9,800, polymorphonuclear leukocytes 78 per cent, small lymphocytes 11 per cent and large mononuclear cells 8 per cent. On October 27 the leukocytes numbered 12,500, polymorphonuclear leukocytes 6 per cent, small lymphocytes 24 per cent, large mononuclear cells 6 per cent and eosinophils 3 per cent.

Blood cultures showed no growth. Analysis of the urine revealed occasional casts and white blood cells but no albumin or sugar. The diazo test gave negative results. Pneumococci (of types I to XXXIII) were not found in the sputum. Mouse injection did not yield pneumococci or tubercle bacilli. The Wassermann reaction was negative. Agglutination tests for typhoid, paratyphoid and A and B brucellosis and typhus all gave negative results.

The temperature was spiky the first week, ranging from 100.5 to 104.5 F., and the pulse rate was comparatively slow, 80 to 120. The second week the curve was typhoidal, and the last two weeks the temperature curve was flat, at 99.5 F. Respirations were for the most part normal.

Another roentgen examination, on November 7, showed left ventricular hypertrophy. There was unresolved, diffuse, patchy pneumonitis.

Treatment was given with drugs of the sulfonamide series, circulatory supportive drugs and the use of an oxygen tent for three weeks.

In view of the clinical aspect of the patient, the roentgen data and the failure of response to treatment with sulfonamide derivatives, a tentative diagnosis of psittacosis was considered for investigation. A specimen of the patient's serum was sent to Dr. Karl Meyer of the George Williams Hooper Foundation in San Francisco, who reported on October 30 a strongly positive reaction (4 plus) for psittacosis (the antigen fixed in a dilution of 1:256).

Except for the occurrence of phlebitis of the right leg, recovery after the third week was uneventful, and the patient was discharged from the hospital on November 15. Subsequent roentgen and electrocardiographic examination was reported as giving normal results.

The only contact with birds known was with pigeons, some of which the New York City Department of Health obtained and forwarded to Dr. Karl Meyer in San Francisco.

1001 Sixty-Fourth Street.

SPONTANEOUS ELIMINATION OF A LIPOMA FROM THE SIGMOID FLEXURE

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Benign tumors of the gastrointestinal tract are not frequent, and lipomas constitute but a small portion of those which do occur. Staemmler,¹ in a series of 17,000 consecutive post-mortem examinations, found only 9 lipomas, an incidence of 0.05 per cent. In a series of 3,924 consecutive autopsies at the Mayo Clinic, Comfort² found 20 intestinal lipomas, an incidence of 0.5 per cent. The discrepancy in these two series may have been due to the difference in size of the series or to the degree of care in searching for lipomas.

From time to time there have been reports in the literature of spontaneous elimination of gastrointestinal lipomas. In the sixty-five years from 1870 to 1935, 15 cases have been reported, 1 reported by Ninaus³ might not be properly included because an invagination of the intestine occurred and the tumor was expelled, together with the involved portion of intestine. In 1939 Odstrcil⁴ reported 3 more instances of spontaneously expelled lipomas, all of which occurred within a period of three years. In 1940 Backenstoe⁵ reported a case of submucous lipoma of the cecum spontaneously eliminated. To these 18 cases we wish to add the report of a case which was seen in the rectal clinic of the Mount Sinai Hospital. Before presenting this, however, several aspects of this phenomenon are worthy of note. Various theories have been offered in explanation of the mechanism of expulsion. One theory offered is that invagination of the affected area of the intestine results in necrosis with sequestration of the intussuscepted portion. Another is that the mucous membrane overlying the lipoma is torn at its base and the tumor slips through the mucosal defect. In our case, only a small portion of one end of the tumor was covered with mucous membrane, suggesting a possible thinning out and tearing of this membrane due either to direct trauma or to loss of blood supply as a result of pressure necrosis.

The symptoms have been varied. In some instances bleeding, usually intermittent, has been the chief or only symptom. In

From the Rectal Clinic and Surgical Service of Dr. John H. Garlock.
1. Cited by Odstrcil.⁴
2. Comfort, M. W.: Submucous Lipoma of the Gastrointestinal Tract with a Report of Twenty-Eight Cases, *Surg., Gynec. & Obst.* 52: 103-112 (Jan.) 1931.
3. Ninaus, cited by Stetten, D.: The Submucous Lipoma of the Gastrointestinal Tract, Two Successfully Operated Cases and Analysis of the Literature, *Surg., Gynec. & Obst.* 9: 156-176 (Aug.) 1909.
4. Odstrcil, B.: Ueber spontane Elimination von Darmlipomen, *Virchows Arch. f. path. Anat.* 305: 413-431, 1939.
5. Backenstoe, G. S.: Spontaneous Expulsion of Submucous Lipoma of Cecum, *Pennsylvania M. J.* 44: 21 (Oct.) 1940.

others pain has been the patient's chief complaint. In several of the cases reported intestinal obstruction or intussusception caused the patient to seek medical assistance. In our case, mucopurulent discharge and intermittent diarrhea led to the tentative diagnosis of colitis by her family physician. There are also cases in which a roentgen examination suggested the presence of a neoplasm for which a laparotomy was performed

REPORT OF CASE

A white woman aged 47 was referred to the Rectal Clinic of the Mount Sinai Hospital by her family physician. She gave a history of intermittent diarrhea accompanied by blood and a mucopurulent discharge of many years' duration. In addition, she stated that she had been totally unable to have a bowel movement for the week prior to her initial visit. On rectal examination, after cleansing enemas had been given, the anus and rectum were found to be essentially normal. The sigmoidoscope was passed full length (25 cm) and blood was seen to be coming down from above this point. A roentgen examination of the colon with a barium enema was done, which was reported to show a filling defect of the midsigmoid region about 6 cm in length, suggesting a polypoid type of neoplasm with intussusception in this area. The remainder of the colon was normal (fig. 1).



Fig. 1.—Filling defect of midsigmoid

On the basis of these observations the patient was advised to enter the hospital for operation. She refused and instead returned to the clinic two weeks later to report that she had had severe abdominal cramps forty-eight hours previously. Accompanying these cramps she experienced an urge to defecate and, when her bowels moved, passed a large amount of blood and a tumor, which she retrieved and brought with her (fig. 2).

The pathologic report on the tumor was that it was a lipoma partially covered by necrotic sigmoidal mucosa showing acute inflammation. The specimen was an oval mass received in fixative and measured 6 by 4 by 4 cm. Three quarters of the mass was fairly soft; the remainder of the surface had a dirty greenish brown color and was somewhat more firm and granular.

Roentgen examination taken three weeks after the spontaneous elimination of the tumor revealed "a filling defect in the midsigmoid region about 3 cm in length" (fig. 3). Although the appearance was much less pronounced than at the previous examination, there was still evidence to suggest a small polypoid mass with intussusception. Another examination four weeks later presented the same picture. The patient has been seen at intervals over a period of five months; during this time she has been entirely symptom free.

The persistent roentgen signs suggest the possibility of another submucous lipoma being present, and because of that the patient will be kept under observation.

In reviewing the cases reported in the literature, we find that they were almost equally divided as to sex. The youngest patient was 16 years of age, the oldest was 87. The majority seemed to have been in the fifth or sixth decade. The exact location of these tumors was not always accurately determined, but the majority seemed to have originated in the colon. Some

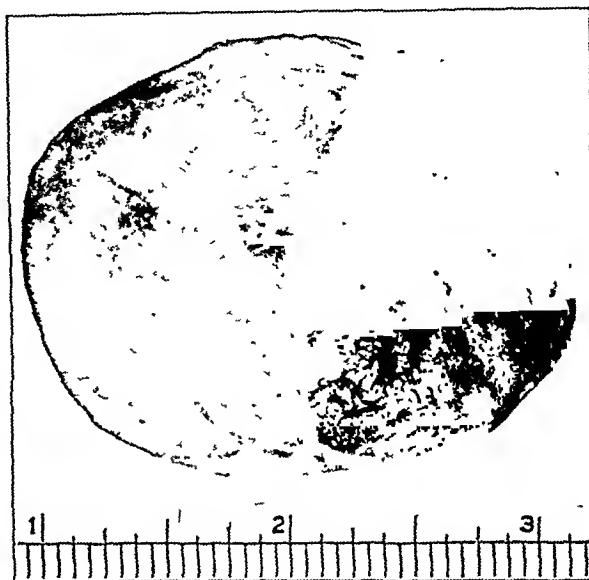


Fig. 2.—Lipoma partially covered by necrotic sigmoid mucosa

of these tumors were merely 2 cm. in diameter, while that reported by Afetzou¹ was supposed to have been the size of a child's head. It should be noted here that the lipoma in the latter instance originated in the rectal ampulla, which may account for the large size that it attained without producing serious obstructive symptoms. Some of these lipomas were polypoid, others were sessile and in 2 instances the patient suffered from multiple lipomas, which were expelled over a period of weeks.



Fig. 3.—Appearance of sigmoid three weeks after elimination of lipoma

SUMMARY

A lipoma of the mid-sigmoid was spontaneously expelled with complete relief of symptoms. Lipomas constitute only a small percentage of the benign tumors of the intestinal tract, which in themselves are infrequent. Surgical intervention resulting from early diagnosis may account for the fact that only 20 instances of spontaneous expulsion of lipomas have been reported in the last seventy years.

336 Central Park West—41 West Ninety-Sixth Street.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

AUSTIN E. SMITH, M.D., Acting Secretary.

PROGESTERONE

The Committee on Revision of the U. S. P. XII has signified the intention of including progesterone, the corpus luteum hormone, in U. S. P. XII. The Council on Pharmacy and Chemistry has already published its preliminary report (J. A. M. A. 116:1523 [April 5] 1941) on progesterone, in which it was stated that the inclusion of this substance in N. N. R. was not warranted because of the lack of adequate evidence that progesterone therapy was conclusively established in any of the clinical indications for which it has been recommended. In its report the Council stated that further consideration of progesterone for acceptance would be deferred until additional scientific evidence becomes available, establishing definitely its usefulness.

In view of the discrepancy between the Council's view and that of the Committee on Revision of the U. S. P., the therapeutic indications for progesterone were again reviewed in the light of the latest available evidence. The Council, however, was unable to alter its opinion as to the status of progesterone therapy, although the potentialities of this substance were recognized. The Council, therefore, reaffirms its previous published opinion regarding the status of progesterone.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

CALCIUM GLUCONATE (See New and Nonofficial Remedies, 1941, p. 176).

The following dosage forms have been accepted.

Wafers Calcium Gluconate (Flavored)-Upjohn, 0.96 Gm (15 grains) Each wafer contains calcium gluconate, U. S. P., 15 grains with sugar, talc, dye and oil of wintergreen for flavoring.

Prepared by The Upjohn Company, Kalamazoo, Mich.

Ampoules Calcium Gluconate Solution 10% W/V Stabilized with Calcium D-Saccharate 1% W/V-Upjohn, 10 cc: Each ampul contains a sterile distilled water solution of calcium gluconate, U. S. P., 1.0 Gm, stabilized with calcium d-saccharate 0.1 Gm.

Prepared by The Upjohn Company, Kalamazoo, Mich.

CALCIUM D-SACCHARATE: The calcium d-saccharate used as a stabilizing agent in these solutions of calcium gluconate so stabilized complies with the following tests and standards.

Calcium d-saccharate occurs as a fine, white, odorless tasteless powder, which is stable in air. It is slightly soluble in water, ether, alcohol and chloroform. A saturated solution of calcium d-saccharate is neutral to litmus and possesses a pH of about 6.0.

Transfer about 0.1 Gm of calcium d-saccharate to a test tube, add 10 cc of water and 1 cc of diluted hydrochloric acid; the resultant solution is clear and colorless. To this solution add 5 cc of ammonium oxalate solution; a white precipitate appears, which is soluble in diluted hydrochloric acid.

Dissolve 0.5 Gm of calcium d-saccharate in 10 cc. of water and 2 cc of diluted hydrochloric acid, and boil the solution for two minutes. Cool, add 5 cc. of sodium carbonate solution, allow to stand for five minutes, dilute to 20 cc with distilled water and filter. Add 5 cc of the filtrate to 2 cc of alkaline cupric tartrate solution and boil for one minute; no red precipitate is formed (dextrose and sucrose).

One Gm of calcium d-saccharate shows no more chloride when tested with diluted nitric acid and silver nitrate solution than 1 cc of fiftieth-normal hydrochloric acid. A 2 Gm portion of calcium d-saccharate shows no more sulfate than corresponds to 1 cc of fiftieth-normal sulfuric acid when tested with diluted hydrochloric acid and barium chloride solution. Dissolve 1 Gm of calcium d-saccharate in 10 cc of distilled water and 3 cc. of diluted hydrochloric acid; add 10 cc. of hydrogen sulfide solution; no precipitate appears, and the color is not darker than a faint brown (heavy metals).

Transfer approximately 0.4 Gm. of calcium d-saccharate, dried over sulfuric acid and accurately weighed, to a 250 cc. beaker, and dissolve in 100 cc. of distilled water and 2 cc. of hydrochloric acid. Add an excess of ammonium oxalate solution, heat to boiling, and slowly neutralize with ammonia water, with stirring. Digest the mixture on a water bath for one hour, filter on hardened filter paper and wash thoroughly with warm distilled water. Puncture the filter paper, wash the precipitate into a beaker by means of a stream of hot distilled water, followed by 30 cc. of diluted (1:3) sulfuric acid. Heat the solution to 60 C. and titrate with tenth-normal potassium permanganate; the calcium oxide content is not less than 17.3 and not more than 17.7 per cent.

SODIUM r-LACTATE ONE-SIXTH MOLAR (See Revised Supplement to New and Nonofficial Remedies, 1941, p. 27).

The following brand has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Sodium Lactate (Racemic) 1/6 Molar (1.87% W/V: 500 cc. and 1,000 cc. Upjohn Infusion Bottles. Each hundred cubic centimeters contains 1.87 Gm. of sodium r-lactate in sterile distilled water.

BLENDED OIL CONTAINING VITAMINS A AND D.—A mixture of fish and/or vegetable oils to which viosterol may be added. The vitamin A content is not less than 1,800 U. S. P. units per gram and the vitamin D content not less than 175 U. S. P. units per gram.

Actions and Uses—See article Vitamins A and D Preparations, N. N. R., 1941, page 562.

Dosage—See article Vitamins A and D Preparations, N. N. R., 1941, page 562.

Blended oil containing vitamins A and D occurs as a thin, liquid oil having a fishy but not rancid odor and a fishy taste. It is insoluble in water, slightly soluble in alcohol and soluble in chloroform, ether, benzene, ethyl acetate and carbon disulfide. The specific gravity is from 0.918 to 0.929 at 25 C. The refractive index is from 1.474 to 1.479 at 25 C.

A solution of one drop of blended oil containing vitamins A and D in 1 cc of chloroform, when shaken with one drop of sulfuric acid, acquires a blue color, gradually changing to purple. Fill a tall cylindrical tube of about 120 cc capacity with the oil and maintain at 0 C for five hours; the oil remains clear and fluid and deposits no solid material.

Dissolve 2 Gm, accurately weighed, of blended oil containing vitamins A and D in 30 cc. of a mixture of equal parts of ether and alcohol, previously neutralized to phenolphthalein, and boil gently under a reflux condenser for ten minutes. Cool and titrate the mixture with tenth normal sodium hydroxide to the production of a pink color which persists for thirty seconds, not more than 1 cc of tenth normal sodium hydroxide is required (free acid). The unsaponifiable matter in blended oil containing vitamins A and D is not more than 1.5 per cent when determined according to the method as given in the U. S. P. XI. The iodine value is not less than 145 nor more than 180. The saponification value is not less than 186 nor more than 202.

MEAD JOHNSON & CO., INC., EVANSVILLE, IND.

Mead's Blended Oil Containing Vitamins A and D: bottles 4 fluid ounces.

U. S. patent 1,680,818 (Aug. 14, 1928; expires 1945) and 1,861,136 (Aug. 9, 1934; expires 1951) under license of the Wisconsin Alumni Research Foundation.

Irradiated ergosterol, prepared by the method described under Mead's Viosterol in oil, is added to fish liver oil, sardine oil and maize oil, and the finished product is required to have a vitamin A potency of not less than 1,800 units (U. S. P.) per gram and not less than 175 units (U. S. P.) of vitamin D per gram.

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).

The following additional dosage forms have been accepted:

HOSPITAL LIQUIDS, INC., CHICAGO.

Dextrose 20% (W/V) in Distilled Water in Filtrair Container: 500 cc, 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 20 Gm.

Dextrose 50% (W/V) in Distilled Water: 50 cc. and 100 cc vials. Each hundred cubic centimeters contains dextrose-U. S. P. 50 Gm.

Dextrose 2 1/2% (W/V) in Physiologic Sodium Chloride Solution in Filtrair Container: 500 cc, 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 2.5 Gm and sodium chloride-U. S. P. 0.9 Gm.

Dextrose 7 1/2% (W/V) in Physiologic Sodium Chloride Solution in Filtrair Container: 500 cc, 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 7.5 Gm. and sodium chloride-U. S. P. 0.9 Gm.

Dextrose 20% (W/V) in Physiologic Sodium Chloride Solution in Filtrair Container: 500 cc, 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 20 Gm. and sodium chloride-U. S. P. 0.9 Gm.

Dextrose 5% (W/V) in Isotonic Solution of Three Chlorides in Filtrair Containers: 500 cc., 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 5 Gm, sodium chloride-U. S. P. 0.7 Gm, potassium chloride-N. F. 0.03 Gm. and calcium chloride-U. S. P. 0.025 Gm.

Dextrose 10% (W/V) in Isotonic Solution of Three Chlorides in Filtrair Container: 500 cc., 1,000 cc. and 2,000 cc. bottles. Each hundred cubic centimeters contains dextrose-U. S. P. 10 Gm., sodium chloride-U. S. P. 0.7 Gm, potassium chloride-N. F. 0.03 Gm. and calcium chloride-U. S. P. 0.025 Gm.

SILVER NITRATE (See New and Nonofficial Remedies, 1941, p. 499).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI.

Solution Silver Nitrate 1% W/V: 0.5 cc. wax ampules.

ANTIPNEUMOCOCCIC SERUM, TYPE 1 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, p. 447).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 1: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 1 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 2 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, p. 448).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 2: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 2 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 3 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, page 449).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 3: Vials, 20,000 and 50,000 units. Also available in vials containing 100,000 units. Each package contains a vial of normal rabbit serum (1:10 dilution) for the conjunctival test. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 3 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 4 (FROM RABBITS) (See Revised Supplement, 1941, page 30).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 4: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 4 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 5 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, page 449).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 5: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 5 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 7 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, page 450).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 7: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 7 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 8 (FROM RABBITS) (See New and Nonofficial Remedies, 1941, page 451).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 8: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 8 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

ANTIPNEUMOCOCCIC SERUM, TYPE 14 (FROM RABBITS) (See THE JOURNAL, Dec. 13, 1941, page 2073).

The following brand has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 14: Vials, 20,000 and 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 14 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

SOLUBLE IODOPHTHALEIN (See New and Nonofficial Remedies, 1941, p. 233).

Ampuls Iodeikon, 3.5 Gm.-Lakeside: Each ampul contains 3.5 Gm. of iodeikon (soluble iodophthalein).

Prepared by Lakeside Laboratories, Inc., Milwaukee.

VIOFORM-CIBA (See New and Nonofficial Remedies, 1941, p. 297).

The following additional dosage form has been accepted:

Tablets Vioform-Ciba, 250 mg.

SULFAPYRIDINE (See New and Nonofficial Remedies, 1941, p. 511).

The following dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Tablets Sulfapyridine: 0.5 Gm. (7½ grains).

MAGNESIUM TRISILICATE (See New and Nonofficial Remedies, 1941, p. 343).

The following dosage form has been accepted:

LAKESIDE LABORATORIES, INC., MILWAUKEE.

Tablets Magnesium Trisilicate: 0.49 Gm. (7½ grains).

AMNIOTIN (See New and Nonofficial Remedies, 1941, p. 375).

The following additional dosage forms have been accepted:

Amniotin Capsules, 10,000 International Units.

Amniotin in Corn Oil, 20 cc. vials, 2,000 International Units per cc.

Amniotin in Corn Oil, 10 cc. vials, 10,000 International Units per cc.

ASCORBIC ACID-U. S. P. (See New and Nonofficial Remedies, 1941, p. 557).

The following dosage form has been accepted:

Tablets Ascorbic Acid-SMACO, 100 mg.

Prepared by the S. M. A. Corporation, Chicago.

SUSPENSION OF EPINEPHRINE IN OIL, 1:500 (See New and Nonofficial Remedies, 1941, p. 255).

Epinephrine in Oil, 1:500-Lakeside.—A brand of suspension of epinephrine in oil, 1:500-N. N. R.

Manufactured by The Lakeside Laboratories, Inc., Milwaukee. No U. S. patent or trademark.

Ampuls Epinephrine in Oil, 1:500-Lakeside, 1 cc.: A suspension of 2 mg. powdered epinephrine crystals in 1 cc. of sesame oil.

DIGITALIS (See New and Nonofficial Remedies, 1941, p. 204).

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Tablets Digitalis: ¾ grain (½ U. S. P. unit) and 1½ grains (1 U. S. P. unit) (enteric coated). The tablets are first coated with a white shellac and then sugar-coated green.

AMINOPYRINE (See New and Nonofficial Remedies, 1941, p. 399).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI.

Tablets Aminopyrine: 0.324 Gm. (5 grains).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 4, 1942

THE ATLANTIC CITY SESSION

Several Fellows of the American Medical Association have suggested that the Atlantic City session might be removed to the interior of the country because of the possibility of increased danger on the sea coast. To obtain an official expression of opinion on this point, the editor of THE JOURNAL consulted Robert P. Patterson, Under Secretary of War, in Washington. Mr. Patterson writes:

Dear Dr. Fishbein:

I have your letter of March 23 raising the question as to whether it would be advisable to move the convention of the American Medical Association away from Atlantic City.

I know of no valid reason why this convention should not be held in Atlantic City. The partial blackout of that city has been ordered to provide safer passage of ships which would be silhouetted against the bright lights of the city.

I want to take this occasion to express my appreciation and that of the War Department for the splendid work that the American Medical Association is doing and will continue to do to aid the Army in the recruitment of physicians who are so badly needed.

Robert P. Patterson,
Under Secretary of War.

The Atlantic City hotels report many reservations; several leading hotels are already completely reserved. The program is complete, including several special sessions devoted to military medical problems. The Convention Number, giving full details, is scheduled for May 2.

MODERN BREAD

For some two years medical and nutritional scientists have discussed the nutritional significance of bread, lawyers have argued about regulations pertaining to flour and bread, advertising copy writers have written about the new enriched bread. Consumers apparently have continued to pay scant attention to the important changes that have been made recently in this basic

food. The average American consumes each day about $6\frac{1}{4}$ ounces of white flour in various forms; to a large extent flour is used as white bread and other bakery products. This amount of flour will provide about one fourth of the average daily caloric requirements. The amount of white pan bakers' bread consumed daily is sufficient to provide each man, woman and child in the country with 70 Gm. of bread each day, or approximately two and one-third slices weighing 30 Gm. each. Nearly all this bread is consumed without special regard to its nutritional value.

Bread today is not the same as ordinary white bread of previous years. Now bakers use greater quantities of dried skim milk in the dough for all bread except Vienna style loaves. Rye bread and whole wheat bread also are ordinarily made without milk solids. If the skim milk solids are added at the rate of 6 pounds to each hundred pounds of flour (much of the white bread now is made with only half as much) the resulting white bread has almost the same riboflavin content as whole wheat bread made with water. Such milk bread has appreciably more calcium, from the milk solids, than the wheat grain. The milk proteins also represent a significant contribution. Nevertheless, ordinary white bread, while it is a good food, does not supply as much dietetic value as nutritional experts consider a bread should provide.

In a monograph entitled "Modern Bread from the Viewpoint of Nutrition," Sherman and Pearson¹ discuss the fundamental characteristics of bread as food, the individual nutritional essentials of importance in wheat and in bread, and the progress that has been made toward improving bread. Whole wheat, say Sherman and Pearson, is an excellent source of iron, but about four fifths of the iron of whole wheat is rejected in the milling of ordinary white flour. The grain is a good source of the vitamins of the B complex, especially of thiamine, but thiamine and riboflavin and nicotinic acid are largely lost in the milling of white flour. Recent work by Elvehjem, as yet unpublished, indicates that other factors of the vitamin B complex are rather uniformly distributed throughout the grain so that white flour and whole wheat flour are both fair sources of pantothenic acid and pyridoxine. Enriched bread will have a considerable portion of the original thiamine restored, and some of the nicotinic acid.

There are three principal methods by which a baker can make enriched bread. One is by using enriched flour instead of ordinary flour. Another is by incorporating in the dough a concentrate of either milling products of wheat or an artificial preparation of the desired composition. Another method is to use a yeast

1. Sherman, H. C., and Pearson, C. S.: *Modern Bread from the Viewpoint of Nutrition*, New York, Macmillan Company, 1942

which has enhanced nutritive value. By any of these methods a white bread indistinguishable from ordinary white bread is obtained or it may have a light creamy color or yellowish brown. Nutritionally it is far superior to ordinary bread. Enriched bread does not have some of the disadvantages of whole wheat bread, although the latter is recognized as a meritorious product. The disadvantages overcome are the higher amount of roughage in whole wheat bread, which some persons are not able to tolerate, and the difficulty of keeping whole wheat flour.

The vast majority of Americans prefer white bread to dark bread. Enriched bread can be made to satisfy this wish without much sacrifice of nutritive values that are associated with the darker breads. In England nutritionally improved bread is made with flour of 85 per cent extraction,² meaning that only 15 per cent of the wheat grain is not incorporated in the flour. Ordinary white flour represents about 70 per cent extraction of the grain. The British bread is fortified with calcium salts, which is an optional ingredient of American enriched bread.

Each slice of either white, enriched or whole wheat bread will supply roughly about 15 Gm. of carbohydrate and 3 Gm. of protein, yielding about 70 calories. A slice of white bread will have about 0.02 mg. of thiamine, a slice of enriched bread will have about 0.07 mg., and a slice of whole wheat bread will have about 0.10 mg. of thiamine. Of nicotinic acid the amounts would be in each slice 0.2, 0.4 and 0.7 mg., the enriched bread again being intermediate in value between that of white bread and that of whole wheat bread. The iron content of the three products will be 0.1, 0.3 and 0.8 mg. respectively for a slice of white, enriched or whole wheat bread. These figures are based on the assumption that the enriched bread is of the minimum value that has been developed for this product. The tendency is definitely to aim toward the minimum rather than the maximum, which is four times more, or some intermediate value. Final standards for enriched bread have not yet been formulated by the Food and Drug Administration. It has been decided, however, that riboflavin, for which standards have been established for enriched flour, will not be required as an ingredient of that product until after the middle of the year 1942.

Within recent years all the changes and improvements in this product have been toward the improvement of its nutritive quality. In the development of enriched bread, bakers have been guided by leading scientists and medical investigators. Sherman and Pearson observe that enriched bread may now safely be utilized to supply as much as 40 per cent of the calories of the normal diet, provided the greater consumption of enriched bread is at the expense of less

nourishing foods. This is an important observation—bread is exceptional from the point of view of economy. More than ever before bread deserves to be called the staff of life. Consumers who buy white bread should demand enriched bread.

SYNTHESES IN THE INTESTINE

The manifold functions of the intestine create many practical problems for the physician. Not the least of these is the fact that the intestine is not sterile; probably the first swallow of food of the newborn infects the tract. The observation that the clotting time of the blood is reestablished at the normal level ordinarily within a week indicates that the intestinal bacterial activity involved in the synthesis of vitamin K is active at that time. Through this symbiotic activity, no doubt, the organism as a whole reaps benefits of various kinds from the biochemical reactions in the intestine. Vigorous support for this thesis has been adduced by some recent observations of synthetic activity in ruminants.

Although micro-organisms can flourish on nutrient mediums whose nitrogen is provided by such simple organic compounds as asparagin, succinamide and urea, only amino acid nitrogen, either as such or in the form of protein, will suffice to promote nutritive well being in the mammal. Nevertheless, in cattle and sheep, nitrogen balance and growth can be promoted when urea provides the major part of the nitrogen. Even the nitrogen of ammonium bicarbonate is utilized.¹ In recent investigations Harris and Mitchell² have demonstrated that urea added to a basal low protein ration not only decreases the loss of body protein of adult sheep but also improves the appetite and the digestibility of the other constituents of the diet. Furthermore, in studies on growing lambs it was shown that nearly normal growth is afforded by the nitrogen of the urea and that the increments of tissue growth are normal in chemical composition. Do these experimental results indicate that the ruminant has a strikingly different requirement for nitrogenous compounds than do man and the carnivora? The evidence indicates that the bacteria in the multiple pouched stomach of these types, utilizing the simple nitrogenous compounds provided in the experimental ration, synthesize their own cell protein and that this bacterial protein then becomes available for the nutrition of the host.

Synthetic activity of intestinal bacteria has been demonstrated in other directions. In a series of studies³

1. Hart, E. B.; Bohstedt, Gustav; Deubald, H. J., and Wegner, M. I.: *J. Dairy Sci.* 22:785 (Oct.) 1939.

2. Harris, L. E., and Mitchell, H. H.: *J. Nutrition* 22:167, 183 (Aug.) 1941.

3. McElroy, L. W., and Goss, Harold: *J. Nutrition* 20:527, 541 (Dec.) 1940. Wegner, M. I.; Booth, A. N.; Elvehjem, C. A., and Hart, E. B.: *Proc. Soc. Exper. Biol. & Med.* 45:769 (Dec.) 1940; 47:90 (May) 1941. Hunt, C. H.; Kiek, C. H.; Ruccougus, E. W.; Bethke, R. M.; Schalk, A. F., and Gerlaugh, Paul: *J. Nutrition* 21:85 (Jan.) 1941.

2. Specifications for National Flour, *Nature* 147:665 (May 31) 1941.

on rumen contents of sheep and cattle secured either after slaughter or by means of a permanent fistula it has been demonstrated that the bacteria in the intestine are able to synthesize thiamine, riboflavin, pyridoxine, pantothenic acid and nicotinic acid as well as vitamin K. This formation of vitamins by intestinal bacteria, which occurred on natural feeds and on experimental rations, can be considered a more or less significant source of these indispensable factors to these animals.

Doubtless similar reactions take place in the human intestine, though the magnitude is too limited to be of practical significance. Nevertheless, such studies suggest that products of bacterial activity may play a part in instituting more favorable conditions in the intestine in man, such as follow implantation of *Bacillus acidophilus*. They may even play a part in immunity.

Current Comment

IMMUNIZATION IS 1942 MAY DAY OBJECTIVE

By authorization of an act of Congress, the President of the United States annually proclaims May Day, May 1, as Child Health Day. Usually special attention is given to the health of infants and children with special reference to preventive measures such as well baby supervision, immunization against communicable diseases, protection of the milk supply and water supply, and corrective measures relating to so-called physical defects. This year May Day is to have a special objective. The migration of populations as a result of defense and war industry, and the building of cantonments with consequent mushroom growth in surrounding communities, plus the necessity for being prepared for possible evacuation has emphasized the danger of epidemics of communicable diseases. The United States Children's Bureau, which is responsible for the May Day celebration, recommends that a major effort be made to secure at once the immunization of all children over 9 months of age against the two diseases for which established methods of immunization are available: smallpox and diphtheria. Instead of waiting for May Day, the Children's Bureau, under the Presidential proclamation, will call specifically for an immediate effort to immunize all children over 9 months of age and, as soon as possible after the ninth month, against these two diseases. Private physicians, public clinics, dispensaries and hospital outpatient departments are urged to make every effort to have these immunizations performed in all children touched by their respective services. This should be achieved before May 1 as a contribution to the health of the nation's children and as a wise precaution against possible epidemics which might go far to disrupt or slow war production or the training of soldiers. These diseases might spread from foci near camps and war industries into the industrial

populations and the military and naval forces themselves. Adults, especially those not previously immunized against diphtheria, may be susceptible to these diseases, especially if they come from remote rural areas. In *Hygeia* in March there were published special articles on diphtheria immunization and smallpox vaccination, and many thousands of reprints are being distributed by health departments in various states. Although not specifically included in the May Day objective, immunization against typhoid, tetanus, whooping cough and scarlet fever may also be performed when indicated in the judgment of the physician.

"DOCTORS AT WORK" AUDIENCE CHECK

Radio program audiences can be checked in several ways. Audience mail response is one of the quickest and easiest, and, if interpreted conservatively, most satisfactory. Few programs receive audience mail in appreciable amount unless some effort is made to cause listeners to write. "Doctors at Work," the radio program of the American Medical Association and the National Broadcasting Company, now in its second season, has no product to offer for sale. To ascertain how many listeners would respond to an offer to send them printed material in the field of health education, Doctors at Work in January 1941 offered a list of first aid supplies and how to use them, suitable for pasting inside the medicine cabinet door. This was announced on two successive programs, only one short reference being made at the end of each broadcast. The offer brought 8,200 letters and cards requesting the list. In April, just as the touring season began to open, another test was made, this time of a chart and table of highway health and accident safeguards. This offer, made in the same way as that in January, brought only 2,800 replies. In 1940-1941, Doctors at Work enjoyed the advantage of a favorable evening hour, 10:30 p. m. eastern time, Wednesdays. In the 1941-1942 season a suitable evening hour was not available, and the series was opened on December 1 at 5:30 p. m. eastern time, Saturdays. In a few weeks this time was switched to 5 o'clock eastern time, where it has since remained. In March 1942 an offer was made to listeners to send them a check list of fifty factors which contribute to the health of home and family, an instrument by which their own health practices could be evaluated. The offer was made in the usual fashion, one short reference on two successive broadcasts. The number of replies exceeded 8,600 (8,650, March 31). It is, of course, impossible to estimate accurately the actual number of listeners from such responses. However, only small percentages of listeners respond even to an offer of more or less tangible objects, such as usable samples. The responses to audience mail tests here reported are considered in radio circles highly satisfactory for a noncommercial program. Doctors at Work has a large following of faithful listeners. This following is nationwide; every state is represented in this response, as are Canadian listeners.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

CIVIL SERVICE COMMISSION RECOMMENDS ENROLMENT

In the past, the U. S. Civil Service Commission, in furnishing to federal agencies the names of physicians, dentists and veterinarians who had qualified in civil service examinations, has found that the making of appointments has been retarded by an excessive proportion of declinations from those eligible when appointment was offered. Persons who were available for federal medical positions when the examination was held were no longer available for such appointment when their names were reached on the commission's register of the eligible.

The present war emergency demands promptness in filling vacancies in various governmental agencies, and the determination of immediate availability of applicants for civil service employment early in the examining process has become of increasing importance. The U. S. Civil Service Commission, therefore, is recommending that all physicians, dentists and veterinarians who are interested in civil service employment enrol with the Procurement and Assignment service, and that they definitely indicate on the questionnaire the governmental agency in which they desire employment.

The agencies which employ the largest number of physicians and dentists under civil service regulations are the Veterans Administration, the Indian Service (Department of the Interior), the Public Health Service

(Federal Security Agency), the Panama Canal and the Children's Bureau (Department of Labor).

At present there is a shortage of fully qualified physicians who are available for employment in the federal civil service, and it is important that more of the physicians who are not available or qualified for commissions in the Army, Navy or Public Health Service offer their services during the war emergency in a civilian capacity in federal agencies having civilian medical services.

In accordance with an executive order, "war service" appointments are now being made in the various governmental agencies. Such appointments are for the duration of the war and for six months thereafter. The physical requirements for war service appointments are liberal. Appointments are being made of physicians who qualify for the associate or full grade medical officer under the U. S. Civil Service Commission's current open continuous examination. To qualify as the associate or full grade medical officer, physicians must have graduated from an approved medical school subsequent to May 1, 1920.

The U. S. Civil Service Commission will utilize the information obtained by the Procurement and Assignment Service's enrolment program in recruiting physicians, dentists and veterinarians to fill the needs of the civilian medical, dental and veterinarian services of governmental agencies.

VERNE K. HARVEY, M.D., Washington, D. C.
Medical Director, U. S. Civil Service Commission.

FEDERAL CIVIL SERVICE

VERNE K. HARVEY, M.D.,
Washington, D. C.

The U. S. Civil Service Commission, responsible for the recruitment of medical and other personnel for positions in the federal government which are subject to civil service law, joins other federal agencies in urging physicians, dentists and veterinarians to enroll with the Procurement and Assignment Service when the enrolment forms are mailed in the very near future.

The commission emphasizes that the lists compiled through the enrolment will be utilized in filling not only positions in the commissioned medical services of the War and Navy departments and the Public Health Service but positions in civilian medical services of federal agencies as well.

The commission is continuing to recruit medical officers by the direct method of announcing and publicizing examinations for medical positions. An examination for medical officer, for example, has been announced on a "continuously open" basis. But the demands of the federal agencies, rapidly expanding as a result of the national emergency, cannot be met by this method alone.

As a supplementary measure, therefore, the commission will call for the names of qualified persons appearing on lists of the

Procurement and Assignment Service who have indicated in their enrolment forms that they are interested in serving in a civilian capacity in one of the federal agencies. The Procurement and Assignment Service will give due consideration to whatever other requests for personnel are pending and then furnish to the commission the names of available physicians, dentists or veterinarians. The Procurement and Assignment Service would select the names of (a) persons who had indicated in their enrolment forms that they were primarily interested in positions in the federal civil service and (b) persons who had expressed a preference for positions in the commissioned service of the War or Navy Department or the Public Health Service but were not qualified therefor. In either instance, only those persons who met the requirements of the commission's examination would be certified to an agency for appointment.

ENROLMENT

Physicians, dentists and veterinarians are requested to indicate in spaces provided on the enrolment form in which of the following classes of medical service they prefer to assist: (1) military (commissioned services of the War and Navy departments and the Public Health Service), (2) governmental (civil service), (3) industrial and (4) civil (nongovernmental). They should indicate their first, second, third and fourth preferences.

Under the heading "U. S. Civil Service Agencies" is a list of some of the federal agencies which maintain civilian medical

services. Those who are interested in employment in the federal civil service should indicate the agency in which they prefer to serve.

PROCEDURE IN MAKING RECOMMENDATIONS

In recognition of the Procurement and Assignment Service's role as the central agency coordinating the distribution of medical personnel, the Civil Service Commission will proceed as follows when applications are received in response to announcement of civil service examinations for physicians, dentists and veterinarians:

1. The names of those applicants who have received an eligible rating will be submitted to the Procurement and Assignment Service, with the view of determining whether or not such applicants are essential in their present positions and localities.

4. The names of those persons who have been designated by the Procurement and Assignment Service as being essential in their present positions and localities will not be certified, and such persons will be notified by the United States Civil Service Commission that they cannot be certified in view of the action taken by the Procurement and Assignment Service.

3. The names of those persons who have been designated as available will be certified as candidates to fill the personnel needs of the various government agencies under civil service rules and regulations.

POSITIONS NOW OPEN IN CIVIL SERVICE

Under an executive order which became effective March 16, 1942 appointments to positions in the federal civil service (those positions in the federal executive civil service which are subject to the Civil Service Act) are placed on a "war service" basis. Appointments are made with the understanding that, provided satisfactory service is rendered, tenure will be for the duration of war and for six months thereafter. Probationary, or "permanent," appointments have been discontinued "for the duration."

Civil service examinations are now open for associate medical officer, \$3,200 a year; medical officer, \$3,800, and senior medical officer, \$4,600. No written test is required. Determination as to whether an applicant is eligible or ineligible for appointment is made on the basis of his education and experience. Applications are considered for any of fifteen optional branches of medical science. Full information regarding the medical officer examinations is set forth in a printed announcement which may be consulted at any first or second class post office. Copies may be obtained by writing to the U. S. Civil Service Commission, Washington, D. C.

A diversified field is open to the physician who elects to assist in the civilian medical services of the federal government during the emergency. The field encompasses virtually every phase of medical activity, ranging from rural practice to the most highly specialized activities.

THE INDIAN SERVICE

Not all civil service physicians are employed in large government hospitals. Many—for example, those employed in the Indian Service—are engaged in the general practice of medicine. The Indian Service maintains general hospitals and sanatoriums ranging from fifty to two hundred and fifty beds. Very active outpatient departments are connected with these hospitals. The physicians make home calls and field trips, conduct school examinations and administer general public health measures among the Indians.

PANAMA CANAL ZONE

Physicians who are interested in tropical diseases receive excellent opportunities to study that subject in the Canal Zone. Civil service physicians in the Canal Zone are employed primarily in dispensary and quarantine work. The dispensary work consists of general practice involving the attendance of government employees and their families, and crews and passengers of vessels. Quarantine physicians are concerned with quarantine and immigration inspection of crews and passengers on incoming vessels.

VETERANS ADMINISTRATION—SPECIAL SERVICES

Large numbers of federal medical officers are engaged in the fields of general practice, tuberculosis, psychiatry, surgery and public health. The opportunity for research in these fields is excellent. The Veterans Administration operates a large tumor clinic at Hines, Ill., tuberculosis clinics at the tuberculosis hos-

pitals, and heart clinics at Mount Alto Hospital, Washington, D. C. At St. Elizabeths Hospital, Washington, D. C., fine opportunities for residencies and internships in neuropsychiatry are open to recent graduates of medical schools. This hospital is under the jurisdiction of the Federal Security Agency.

FOOD AND DRUG ADMINISTRATION

Medical officers in the Food and Drug Administration (Federal Security Agency) are engaged in a critical review of the labelings of medicines in the light of their composition for the purpose of ascertaining whether or not the therapeutic representations are true or false as judged by a consensus of present day medical opinion. This work offers excellent opportunities to recent graduates of medical schools who have had, in addition to their regular medical education, experience in pharmacology.

CHILDREN'S BUREAU

The Child Hygiene Division of the Children's Bureau (Department of Labor) carries on research and investigation involving fundamental technical medical investigations of the mental and physical condition of children in relation to heredity, environment, nutrition and the efficacy of various methods of community health work. There are opportunities in this bureau for physicians with special training in pediatrics, obstetrics or public health procedure.

PUBLIC HEALTH SERVICE

Civilian medical officers in the Public Health Service (Federal Security Agency), as distinguished from medical officers in the commissioned force, are appointed as acting assistant surgeons and are usually detailed for local duty in the vicinity in which they reside. From time to time, however, there is opportunity for them to transfer elsewhere. They are employed in connection with practically all the activities of the Public Health Service. These include hospital and relief work, quarantine and immigration work, field investigations and epidemic control duty. The Public Health Service operates marine hospitals and relief stations throughout the United States. The beneficiaries in these hospitals and relief stations consist principally of merchant seamen, officers and enlisted men of the United States Coast Guard and civil employees of the federal government injured in line of duty.

The services of acting assistant surgeons are utilized at a large number of marine quarantine stations in connection with the inspection of vessels entering the United States from foreign ports and in connection with the medical examination of aliens entering this country. Acting assistant surgeons conduct investigations pertaining to industrial hygiene, goiter, anthrax, influenza, malaria, pellagra, pneumonia, tuberculosis, typhoid, child hygiene and public health administration.

VETERANS ADMINISTRATION

The Veterans Administration employs more civil service physicians than any other government agency. The medical service of the Veterans Administration comprises regional offices, facilities and diagnostic centers. The term "facility" is applied to various types of field stations, including those which are hospitals only, those which may provide domiciliary care and hospitalization, others which are a combination of regional offices and hospitals, and still others which are a combination of regional offices and homes. Facilities may be primarily designed for general (medical and surgical) service or for tuberculosis or neuropsychiatric service. However, some have a mixed service which may be a combination of any of these.

New appointees are first sent to one of several selected facilities of the Veterans Administration, at which they are given a training course in medical subjects and in administration, as based on the Regulation and Procedure, the Manual for Medical Examiners, clinical bulletins and other instructional publications of the Veterans Administration. After passing an examination at the end of this preliminary training course, appointees are assigned at the same or another facility for ward and other duties pertaining to an associate physician. Physicians in the service must be available for transfer to any facility within the continental limits of the country as need for their service arises.

The diagnostic centers located at Washington, D. C., Hines, Ill., and San Francisco were established for intensive study and

observation of patients presenting diagnostic problems and have consultant staffs consisting of physicians of national reputation in their fields. The diagnostic center at Hines, Ill., has one of the largest and most modern tumor clinics in the world.

Small clinics for thorough diagnosis and treatment of malignant growths are located strategically in facilities in New York City, Washington, D. C., Atlanta, Ga., Portland, Ore., and Los Angeles.

In nine facilities, scattered throughout the country, centers have been created for special chest surgery.

The volume and variety of the medical activities of the Veterans Administration are approached by few if any other organization. Veterans of former wars constitute a public of approximately four and one-half million persons who are potentially entitled to treatment by the Veterans Administration. Continuous accretions to that total are made through discharges from service of disabled officers and enlisted men of the Army, Navy, Marine Corps and Coast Guard. The huge total of hospital beds is constantly in demand, and abundant clinical material is afforded in all fields of medicine save obstetrics and pediatrics. The proportions of outpatient activities are unprecedented: In the fiscal year ended June 30, 1941 a total of 1,111,589 physical examinations were made and 1,176,658 treatments were rendered in the outpatient service. It is not only the numerical proportions of this service that make it valuable but quite as much the peculiar advantage derived from the continuity of contact that is afforded. It is the usual experience of civilian clinics to have patients drop off before completion of study or treatment; but the reexaminations that are called for from time to time, for purposes of pension, disability, compensation, government insurance, treatment and so on insure follow-up of Veterans Administration beneficiaries through successive years. The evolution of conditions can thus be observed, errors in earlier diagnoses can be corrected, and treatment to meet present indications can be prescribed to advantage through these circumstances.

The Veterans Administration is committed to and maintains a high standard of medical treatment and care. Clinicopathologic conferences of hospital staffs are regularly held. Continuous attention is given to the introduction of new diagnostic and

treatment methods, and the laboratory and clinical equipment is of modern design. Postgraduate "refresher" courses, as well as postgraduate courses in the specialties, are arranged whenever necessary at several of the larger stations, and official leave may be granted for attendance at courses in other clinics and hospitals in the country.

Medical research is supervised by a specially trained physician of the staff of the medical director, and projects are entrusted to physicians having the basic special qualifications to conduct them or who show aptitude for research. The Cardiovascular Research Unit, at Washington, D. C., was organized, under the direction of a chief, to standardize concepts and practices in cardiology, use of the electrocardiograph and so on. The Tumor Research Unit at Hines, Ill., conducts clinical and experimental research into the cancer problem and has published numerous papers and monographs on technical phases of this work. The Neuropsychiatric Research Unit at Northport, L. I., N. Y., conducts clinical and laboratory research in connection with neuropsychiatric disabilities and is engaged in standardizing the diagnostic and therapeutic methods used in connection with the management of neuropsychiatric disabilities. The *Medical Bulletin* of the Veterans Administration, issued quarterly, provides opportunity for the publication of articles and case reports prepared by physicians of the service.

OTHER GOVERNMENT AGENCIES

To a lesser extent, medical officers are employed in various other government agencies. Two medical officers in the Government Printing Office are in charge of a small well equipped hospital in which employees who are injured or become ill while on duty are treated. The Bureau of Engraving and Printing requires the services of a physician for similar duty. The Census Bureau of the Department of Commerce employs physicians who engage in medical statistical study. In the Civil Service Commission in Washington, D. C., and in thirteen district offices a number of medical officers are engaged in medical activities pertaining to government employment. This activity is a combination of insurance, industrial and administrative medicine and affords young physicians a basic training in these fields which is unique in the United States.

HEALTH OF SELECTIVE SERVICE REGISTRANTS

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The Selective Service System is making a comprehensive analysis of the reports of physical examination of the registrants examined in accordance with the Selective Training and Service Act of 1940. Pending the complete analysis of these reports, a survey has been made of 19,923 medical records to provide an index to the physical fitness for military service of American youths between the ages of 21 and 36. This sample was drawn from each state in proportion to total registration and consists of a cross section of registrants examined prior to May 31, 1941.

RATE AND CAUSES OF REJECTION

This sample analysis of medical records and summary reports from the Selective Service local boards indicates that about 50 per cent of the approximately two million registrants who have been examined have been found

by local boards and by Army induction stations to be unqualified for general military service, physically, mentally and educationally. Of the approximately one million registrants who were not qualified for general military service, 900,000 were so classified because of lack of physical and mental qualifications and the remaining 100,000 because of lack of educational qualifications. The minimum educational requirement for a registrant to be inducted into the Army is the ability to read and write the English language as well as a student who has satisfactorily completed the fourth grade in an American grammar school. More than one half, 470,000, of the 900,000 rejected for physical and mental reasons were qualified for limited military service only, and 430,000 were totally disqualified for any military service.

Based on the major pathologic condition recorded or the principal cause of rejection by Selective Service local boards and by Army induction stations, dental deficiencies accounted for an estimated 188,000, or 20.9 per cent of the 900,000 registrants not qualified for general military service. Defects of the eyes and impaired vision constituted an estimated 123,000, or 13.7 per cent.

The estimated number of registrants found to be unqualified for general military service by other defects or diseases are set forth in table 1 and chart 1. The table also shows a breakdown of the number who were found to be available for limited military service by Selective Service local boards and those who were dis-

qualified for any military service. Hernias, venereal diseases and defects and diseases of the teeth, eyes and feet were the principal types that, while disqualifying for general military service, still would permit the individual registrant to perform limited military service. Diseases and defects of the cardiovascular system seem to be the principal causes in total disqualifications for any military service.

Included in the miscellaneous group were diseases and defects of the mouth and gums, nose, throat, kidneys and urinary system, abdomen, genitalia and skin together with hemorrhoids, varicose veins, tumors, and infectious and parasitic diseases.

INCIDENCE OF DEFECTS

The major pathologic condition indicates the reason why registrants were rejected but does not afford an

number of defects tabulated. Dental defects, which were the largest cause of rejection for military service, comprised 10.3 per cent of the diseases and defects. In addition to nondisqualifying defects, a large proportion of the disqualifying defects are minor as far as health conditions are concerned.

Many defects are a cause for rejection for service in the Army but in no way hinder the performance of many civilian occupations.

AGE, HEIGHT AND WEIGHT OF REGISTRANTS

As the reports of physical examination considered in this survey were for men examined prior to May 31, 1941, registrants between the ages of 21 and 36 were included as well as a small number of men between the ages of 18 and 21 who volunteered through the Selective Service System for military service. Two

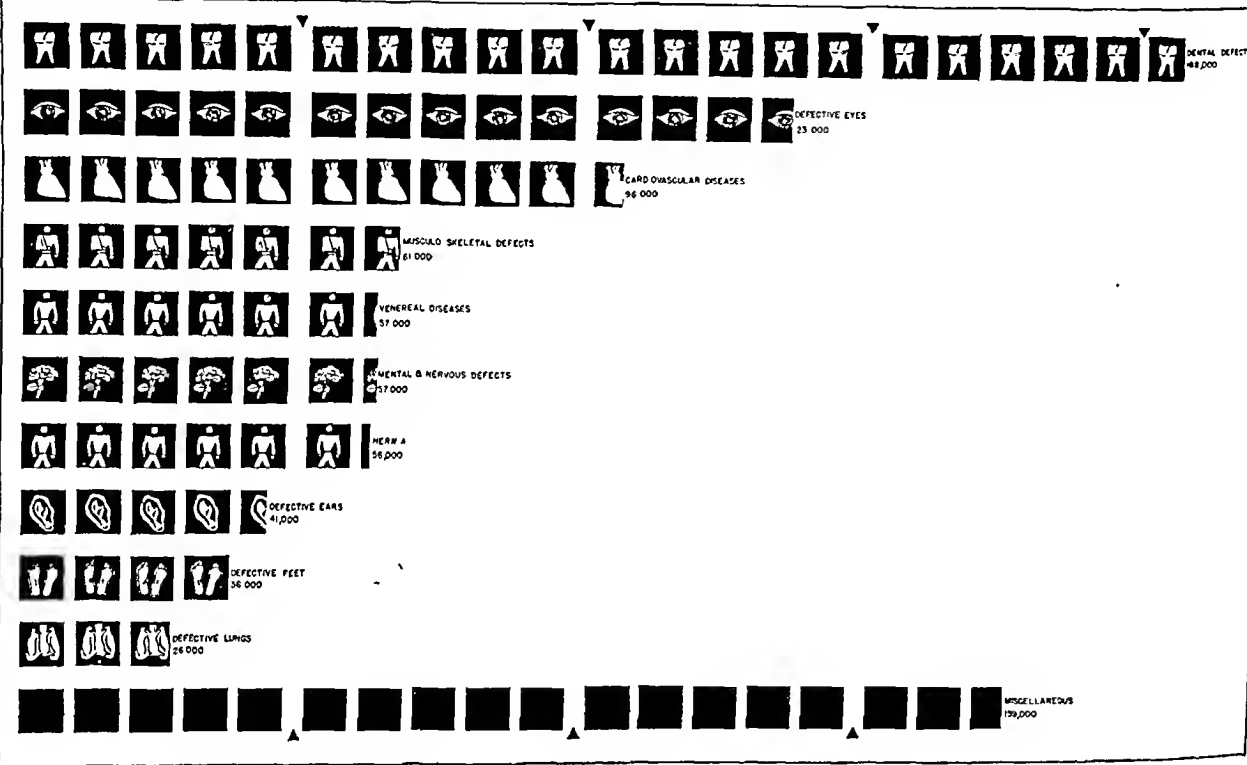


Chart 1.—Estimated number of selectees rejected. Each symbol represents 1 per cent of the 900,000 rejected.

accurate index as to the incidence and prevalence of diseases and defects among registrants. In this study a maximum of three defects was recorded. A total of 27,031 defects were tabulated from the 19,923 reports of physical examination, an average of one and four-tenths defects per registrant examined. No defects were recorded, however, for 5,741 registrants, or 29 per cent, of the total number examined. Of the total of 27,031 defects, one or more were recorded for each of 14,182 registrants, an average of one and nine-tenths defects per registrant with defects. Two defects were recorded for each of 8,433 registrants and three defects for 4,416 registrants.

In table 2 there is a list of the defects or diseases tabulated by broad classifications with the rate per thousand registrants examined. This tabulation includes defects which do not disqualify as well as defects which do disqualify for general military service. Defective feet accounted for the largest number of disease and defects recorded for any single organ, section or system of the body and comprised 10.7 per cent of the total

thirds of the registrants examined by local boards were between the ages of 21 and 27, inclusive. Registrants between the ages of 28 and 36, inclusive, accounted for 31.3 per cent of the total number examined, and the number of volunteers between the ages of 18 and 21 accounted for 2.1 per cent of the total registrants examined.

The rate of rejection for registrants between the ages of 31 and 36 was nearly twice as great as that of registrants between the ages of 21 and 25, inclusive. Sixty-one per cent of the registrants between the ages of 31 and 36 were unacceptable for general military service as compared to 45 per cent between the ages of 26 and 30 and 34 per cent between the ages of 21 and 25. The percentage who were qualified for general military service varied from 70.5 for registrants 21 years old to 29.9 for registrants who were 36 years old at the time of physical examination.

The relationship that exists between the registrant's age and availability for general military service is shown in table 3 and chart 2.

The average height of registrants examined was 67½ inches (171 cm.), the average weight was 150 pounds (68 Kg.) and the average chest measurement in forced expiration was 33¼ inches (86 cm.). The average height of registrants qualified for general military service was 68½ inches (173 cm.) and the average weight was 152 pounds (69 Kg.). The height of registrants examined varied from 54 inches (137 cm.) to 88 inches (223.5 cm.), and 98.3 per cent of the registrants were between 60 inches (152 cm.) and 78 inches (198 cm.) in height, which are the minimal and maximal heights, respectively, for acceptance by the Army.

the registrants examined were from urban communities. The rate of rejection for registrants from urban areas was 42.4 per cent as compared to 38.1 per cent for rural areas.

The United States and its territories were the place of birth of 97.3 per cent of the registrants examined, most of the others having been born in Canada, British Isles and Europe. The rate of rejections for native born registrants was 40.9 per cent as compared to 45.6 per cent for registrants who were born outside the United States and its territories.

This finding perhaps, can be accounted for by the differences in age groups.

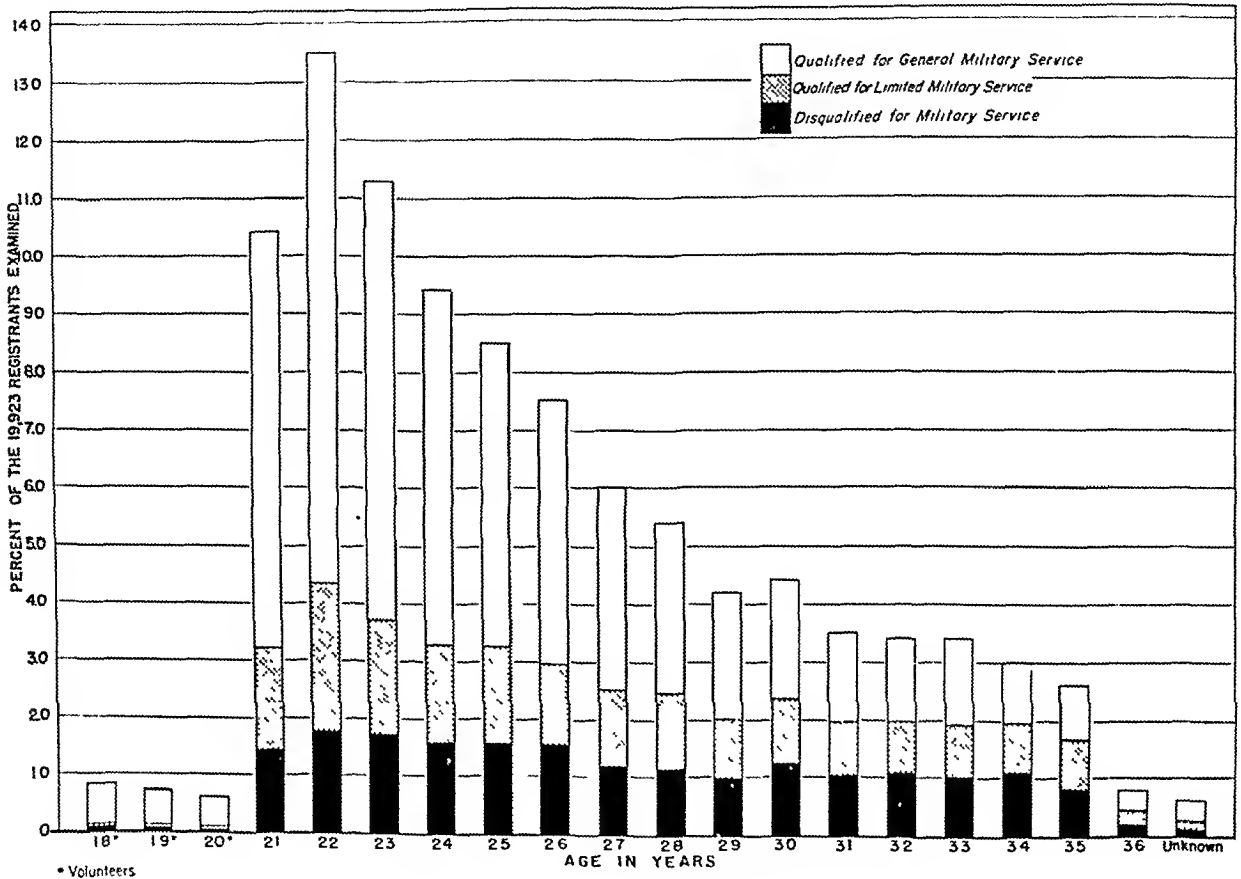


Chart 2.—Classification for military service in relation to age.

Registrants varied in weight from 85 pounds (38.6 Kg.) to 385 pounds (175 Kg.), and 93 per cent were between 100 pounds (45.4 Kg.) and 190 pounds (86 Kg.). The minimum weight for admittance into the Army for registrants 60 inches (152 cm.) tall is 105 pounds (47.6 Kg.), and the standard weight for a registrant 78 inches (198 cm.) tall is 184 pounds (83.5 Kg.).

RACE, URBAN-RURAL RESIDENCE AND PLACE OF BIRTH

The ratio of Negro registrants to the total number examined was approximately the same as the ratio of Negroes to the total population, 11 per cent. Registrants of other races, which accounted for less than 1 per cent of the total number examined, were mostly Chinese, Japanese and Indians. The rate of rejection for Negro registrants was 42.6 per cent as compared to 40.8 per cent for white registrants. Two thirds of

OCCUPATION

About one seventh of all registrants examined were unemployed at the time of examination. The largest group of employed registrants physically examined were operatives and kindred workers, which comprised about 20 per cent. Most numerous among operatives and kindred workers were chauffeurs, truck drivers, delivery men, weavers, knitters, spinners, assemblers and operators of lathes, drill presses and other machines. Farmers and farm laborers, the second largest employed group, accounted for 14 per cent of the total number examined. Craftsmen and foremen, which accounted for 8 per cent of all registrants examined, were mostly carpenters, cabinet makers, pattern makers, mechanics, repairmen, machinists, millwrights, tool makers, painters, paper hangers and printers. Approximately 1 per cent of the registrants examined were students. The occupations of the registrants examined are shown by broad classifications in table 4.

COMMENT

The information and data contained herein are the best available as to the health of a part of the United States male population. While these data indicate that approximately one half of the registrants being

for any military service in the United States Army evidence health conditions which would be acceptable for military duty in any army in continental Europe. Registrants are not physically examined who are found by Selective Service local boards to be essential to the national health, safety and welfare, such as those having community responsibilities to dependents or holding essential jobs

In the World War approximately 64 per cent of the 3,208,446 registrants examined between Dec. 15, 1917 and Sept. 11, 1918 were qualified for general military service.¹ An additional 17 per cent were qualified for limited military service, and 19 per cent were disqualified for any type of military service. This compares, not so unfavorably, with about 25 per cent being totally rejected for any type of military service at the present time when it is recalled that the examinations were made under considerably different conditions. During the World War period standards changed seven

TABLE 1.—Estimated Number of Registrants Found to be Unqualified for General Military Service Because of Physical and Mental Reasons, by Availability for Military Service and by Defect or Disease

Major Defect or Disease	Unqualified for General Military Service by Selective Service *			Unqualified for General Military Service by the Army †	Percentage of Estimated Total Unqualified for General Military Service	
	Qualified for Limited Military Service	Disqualified for Any Military Service	Total		Unqualified for General Military Service	Unqualified for Limited Military Service
	100,000	53,000	153,000	35,000	188,000	20.9
Teeth	72,000	28,000	100,000	20,000	123,000	13.7
Eyes	17,000	67,000	84,000	12,000	96,000	10.6
Cardiovascular system	27,000	20,000	52,000	9,000	61,000	6.8
Musculoskeletal	30,000	14,000	49,000	8,000	57,000	6.3
Veneral	8,000	50,000	38,000	19,000	57,000	6.3
Mental and nervous	55,000	11,000	46,000	10,000	56,000	6.2
Hernia ..	7,000	18,000	25,000	16,000	41,000	4.6
Ears	21,000	9,000	30,000	6,000	36,000	4.0
Feet	6,000	11,000	17,000	9,000	26,000	2.9
Lungs ‡	72,000	34,000	126,000	33,000	159,000	17.7
Miscellaneous						
Total	400,000	20,000	720,000	180,000	900,000	100.0

* The major defect or disease for each registrant was determined by the principal cause of rejection

† These estimates are based on classification reports from local boards as to the number qualified for limited military service, the number disqualified for any military service, and on the rates of rejection for each group of defects or diseases as revealed in an analysis of 19,923 reports of physical examination. These estimates are based on the classification reports from local boards as to the total number found unqualified for general military service at the Army induction station, and on the rates of rejection for each group of defects or diseases as revealed in an analysis of 123,000 reports of physical examination at the Army induction station as released by the War Department

‡ Including tuberculosis

TABLE 3.—Age of Registrants by Availability for Military Service

Age *	Total Examined		Qualified for General Military Service		Qualified for Limited Military Service		Disqualified for Military Service	
	Num	Per Cent	Num	Per Cent	Num	Per Cent	Num	Per Cent
	ber		ber		ber		ber	
18	153	0.8	120	84.3	8	5.2	16	10.5
19	143	0.7	118	82.5	13	9.1	12	8.4
20	127	0.6	64	74.0	17	13.4	10	12.6
21	2,053	10.4	1,469	70.5	347	16.7	207	12.8
22	2,683	13.5	1,810	67.3	511	19.0	367	13.7
23	2,248	11.3	1,504	66.9	393	17.5	351	15.6
24	1,872	9.4	1,222	65.3	343	18.3	307	16.4
25	1,692	8.5	1,034	61.1	331	19.6	327	19.3
26	1,492	7.5	905	60.7	270	18.5	311	20.8
27	1,189	6.0	682	57.4	268	22.5	239	20.1
28	1,071	5.4	576	53.8	260	24.3	235	21.9
29	839	4.2	435	51.8	213	25.4	191	22.8
30	869	4.4	400	46.0	226	26.0	243	28.0
31	697	3.5	306	43.0	188	27.0	203	29.1
32	681	3.4	282	41.4	188	27.6	211	31.0
33	609	3.4	282	42.4	188	28.1	199	29.7
34	602	3.0	212	35.2	150	26.4	241	28.4
35	537	2.6	176	34.4	172	32.0	179	31.0
36	157	0.8	47	29.9	54	34.4	56	35.7
Unknown	124	0.6	71	57.2	29	23.4	24	19.4
Total	19,923	100.0	11,754	59.0	4,184	21.0	3,985	20.0

* Age at last birthday at time of physical examination

TABLE 2.—Incidence of Defects Found in 19,923 Registrants Examined by Selective Service Local Boards

Defect or Disease	Number of Defects Found	Rate of Defects per 1,000 Examined
Eyes	2,305	115.7
Ears	887	44.3
Teeth	2,795	140.3
Mouth and gums	1,273	63.9
Nose	1,172	58.9
Throat	1,321	66.3
Lungs	327	16.4
Tuberculosis	114	5.7
Cardiovascular system	2,000	100.4
Blood and blood forming organs	19	1.0
Hernia	1,287	64.6
Kidneys and urinary system	279	14.0
Abdominal viscera	244	12.2
Genitalia	1,177	59.0
Veneral	670	33.9
Skin ..	2,405	115.8
Hemorrhoids and rectal defects	114	5.7
Varicose veins	531	26.7
Mental and educational deficiency and illiteracy	239	12.0
Mental disorders	62	3.1
Neurologic	454	22.8
Musculoskeletal	2,018	101.3
Feet	2,888	145.0
Endocrine disturbances	19	1.0
Tumors	228	11.3
Infectious, parasitic and epidemic diseases	7	0.4
Other diseases and defects	974	48.9
Total	27,011	1,356.8

examined are found to be unfit for the performance of general military service, an additional one fourth are qualified for limited military service. Registrants classed as available for limited military service are not being inducted at the present time.

There seems to be little doubt that most of the registrants classed as available for limited military service and a substantial portion of those classed as disqualified

times. Registrants being examined during that period were mostly between the ages of 21 and 30 as compared to 21 and 36 in the data presented here.

Advances since 1918 in clinical medicine and diagnostic and laboratory procedures now present the means of eliminating more men from the service. For example, many registrants are being rejected because of latent syphilis that would not have been recognized in the World War. Chest roentgenograms are being used extensively. Many cases of tuberculosis are being found now that could not previously have been detected. By concentrated efforts, many of the men with borderline mental conditions are being rejected at the present time who would have been accepted into the Army in 1918. Also the psychology of the examiners themselves is entirely different than that which prevailed in the World War. Then it was necessary to secure men quickly, train them hurriedly and transport them to the theater of operation in the minimal time possible. Hurried examinations did not permit the close observations that are being made today. It is essential for the men being inducted into the Army at the present time to be capable of efficient work and hard living, and to

1 Second Report of the Provost Marshal General to the Secretary of War on the Operations of the Selective Service System to Dec. 31, 1918. Washington: D. C. Government Printing Office, 1919

be otherwise capable of handling the more complicated procedure and mechanics of the modernized army.

The average height of recruits examined during the World War was 67½ inches (171 cm.), the average weight was 142 pounds (64 Kg.) and the average chest

TABLE 4.—Occupations of 19,923 Registrants
Physically Examined

Occupation	Number of Registrants Physically Examined	Percentage of Total Examined
Professional workers	390	3.0
Semiprofessional workers	226	1.1
Farmers (owners, tenants and croppers) and farm managers	1,090	5.5
Proprietors, managers and officials, except farm	779	3.9
Clerical and kindred workers.....	1,548	7.8
Salesmen	878	4.4
Craftsmen, foremen and kindred workers.....	1,670	8.4
Operatives and kindred workers.....	4,064	20.4
Domestic service workers.....	56	0.3
Protective service workers.....	64	0.3
Service workers, except domestic and protective	936	4.7
Farm laborers and foremen.....	1,683	8.4
Laborers, except farm and mine.....	2,487	12.5
Nonclassifiable returns	571	2.9
Emergency workers and unemployed.....	3,042	15.3
Students	221	1.1
Total.....	19,923	100.0

measurement in forced expiration was 33½ inches (84 cm.). It is estimated that the average height in men examined for military service in the federal forces during the Civil War was 67½ inches (171 cm.), the average weight was 136 pounds (61.7 Kg.) and the

average chest measurement at expiration was 33½ inches (84 cm.).² In Canada the average height of registrants being examined for military duty is 66⅔ inches (169 cm.), the average weight 144⅔ pounds (65.5 Kg.) and the average age 22½ years. Comparison of defects with those found in men entering the Canadian army is not possible, owing to the fact that the examination given is primarily a coarse screening as compared to the thorough examination in this country. The principal causes of rejection in Canada are defects of the feet and nose, and hernias.

The administration by the Selective Service System and the Army of what might be considered fairly high physical standards has produced, unqualifiedly, an army with the best physical condition of any comparable sized army in history. In many cases such modern conveniences as automobiles, street cars, elevators and household gadgets have produced flabbiness of muscle and at times paunchiness in the waistline. This, however, is not to be confused with soundness of health, which is determined more by sturdiness of framework, a sound heart, sound lungs and respiratory system, a good digestive system and a stable mental and nervous system. The vast majority of registrants can be hardened by training. This does not mean, however, that we should overlook the warning signaled to us by the discovery of this huge number of hidden defects and diseases in such a large proportion of the registrants.

2. Medical Department of the United States Army in the World War, Volume XV, Statistics, Part I, Army Anthropology, Charles B. Davenport and Albert G. Love, Washington, D. C., Government Printing Office, 1921.

SPECIALISTS SHARE FEES WITH MEMBERS IN MILITARY SERVICE

Recognizing the financial sacrifice which members of its organization who have gone into the military service have made, the Indianapolis Ophthalmological and Oto-Laryngological Society has adopted a resolution to the effect that 50 per cent of all fees collected by members from patients who belong to the practice of any member engaged in military service shall be remitted to such members until they return to civil practice; also that on return from military service to civil practice of such members, all patients belonging to their prior practice shall be returned to them by those members who may come into professional contact with such patients. The society also voted to waive all dues and assessments of those who enter the military service and shall consider such members in good standing in that society for the duration of their military service and for the period of one year thereafter.

FUNCTION OF MEDICAL ADVISORY BOARDS (VI)

Memorandum (1-403) Concerning Relationships of Medical Examinations by Induction and Advisory Boards

It has been brought to the attention of this headquarters that in some of the corps areas registrants are being referred back to local boards and medical advisory boards by the examining and induction stations for additional examinations, including laboratory and x-ray tests, to determine their physical qualifications for induction.

The Medical Advisory Board is an element of the Selective Service System. There is no objection to the use by the Army of the specialists on such boards provided the cost is borne by the Army and it is distinctly understood that such services are rendered to and for the Army. In no event should a registrant be referred back to local boards for an additional examination prior to a final action by the examining and induction stations.

A problem arises, not infrequently, at the examining and induction stations, where the registrant declares that he suffers from epilepsy, asthma or other conditions and yet presents no proof other than his bare statement. Because of lack of acquaint-

tance with the registrant, the examiner naturally is uncertain as to the truth or falsity of the statement. If such cases are rejected and returned to the local board, a statement will be made by the examining and induction stations under remarks on the "Report of Physical Examination and Induction" (form 221), giving the basis for the cause of rejection. If the local board or its examining physician has reason to believe that the registrant has falsified such a statement, it may accumulate evidence to justify its belief and return the registrant at a subsequent date, accompanied by such evidence.

LEWIS B. HERSHEY,
Director, Selective Service System.

PRICE OF RUBBER DRUG SUNDRIES

Manufacturers of rubber drug sundries, including essential hospital and medical items, were requested not to advance prices above those in effect on March 1 in a letter sent to them by Acting Price Administrator John E. Hamm of the Office of Price Administration. The purpose of the request is to keep prices from mounting pending completion of an investigation to determine proper maximum prices for rubber drug sundries. Manufacturers of such items have been allotted a supply of crude rubber and latex by the War Production Board because of the essential nature of the products. It is "essential that prices at all manufacturing and distributing levels reflect only increases which are absolutely necessary for the maintenance of production." Manufacturers will be asked in the near future to submit pertinent cost and earnings data. Manufacturers who intend any change in specifications or quality standards are asked to communicate with the OPA before establishing prices on the altered articles.

NEW ARMY DENTAL CHIEF

Col. Robert H. Mills, D. C., U. S. Army, has been nominated by the President to be Assistant Surgeon General, to succeed Brig. Gen. Leigh C. Fairbank, D. C., who retired on February 28. Colonel Mills has been chief dental surgeon in the Ninth Corps Area.

ORGANIZATION SECTION

OFFICIAL NOTES

INDUSTRIAL HEALTH

Report of a Joint Session Between the Subcommittee on Industrial Health and Medicine, Federal Security Agency, and the Council on Industrial Health, American Medical Association

The Subcommittee on Industrial Health and Medicine of the Federal Security Agency and the Council on Industrial Health met jointly in Chicago on Sunday, January 11. Those present were Stanley J. Seeger, Harvey Bartle, Leverett D. Bristol, Warren F. Draper, Philip Drinker, Leroy U. Gardner, Raymond Hussey, Anthony J. Lanza, Robert T. Legge, Clarence D. Selby, Roscoe L. Sensenich, Olin West, Carl M. Peterson, James A. Crabtree, E. C. Holmblad, Lloyd Nofand, George M. Smith, Capt. T. C. Bedwell, J. J. Bloomfield, Licut. Comdr. Otto L. Burton, J. G. Cunningham, Comdr. Edward H. Cushing, Morris Fishbein, Don Hogate, O. J. Johnson, R. G. Leland, Major Sam F. Seeley, James Sterner and James T. Townsend.

To aid the medical profession in extending and improving its contribution to industrial medical service, medical societies in states and counties have been supplied with a program which will accelerate preparation. Medical and professional schools also have improved and expanded training programs. At present a joint report prepared by the Council on Industrial Health and the American Association of Industrial Physicians and Surgeons on improved industrial health education is in final stages of revision preceding publication and wide distribution to medical educators and organizations.

If industry is to absorb the products of accelerated industrial health education, some concomitant program of training industry in the advantages of medical supervision over workers is indispensable. The principal problem relates to small plants which are, or consider themselves, unable individually to support medical and nursing programs.

The Division of Industrial Hygiene of the U. S. Public Health Service reported that greater effort will be necessary to establish cooperation between bureaus of industrial hygiene and committees on industrial health in the various states. The annual budget for industrial hygiene in the U. S. Public Health Service amounts to about \$650,000. Of the one hundred and sixty-one employees in the division, twenty-four are physicians and twenty-three are engineers. Medical and engineering studies have been conducted in government owned ordnance plants, quartermaster corps depots and air corps plants. Recommendations are being put into effect. Fifty-five government owned privately operated ordnance plants are certified for similar study. A reliable test for night vision is being sought, useful in the selection of pilots, truck drivers and night workers under black-out conditions. Other studies are to help in the selection of airplane pilots and bombardiers. Thirty-six states, four cities, two counties and two territories conduct industrial hygiene bureaus requiring a budget of \$1,000,000 for 1942. During the year ended June 30, 1941, 6,084 investigations were made involving 1,509,797 workers. These bureaus cooperate with the National Committee for the Conservation of Man Power in Industry and attempt to investigate plants having Walsh-Healy contracts. These state bureaus also supply consulting service in relation to dermatoses, nursing and sick absenteeism reporting. Over 90 per cent of the work of the research section of the Division of Industrial Hygiene deals with toxicity of explosives, solvents, chemicals and metals, the development of instruments for detection and measurement of exposures, high altitude effects, fatigue, and crowded working and living conditions. Miscellaneous activities include the preparation of a

bibliography on mental hygiene in industry, inspection of plant medical services, development of educational pamphlets, radio scripts and films, preparation of technical standards in cooperation with the American Standards Association and advancement of plans for industrial nursing services, mainly of a part time character, to small industrial establishments.

Since adequate personnel is basic to a solution of medical service in industry, the Procurement and Assignment Service is charged with the avoidance of raiding industry of essential physicians and will do so if sufficient numbers of eligible medical people are available to fill military requirements. A reserve officer must immediately make a definite determination whether he is essential for industry or not and submit necessary representations to the adjutant general's office to obtain temporary *deferment*. Other physicians under 45 who are physically fit must be certified as absolutely essential to industry by the managements which hire them. Physicians in the 45 to 60 groups will be dislocated if certain specialist classifications are called up. In the over 60 group, dislocation is considered unlikely.

As substitutes for eligible and replaceable industrial physicians, reliance should be directed to physically unfit male physicians under 45, male physicians over 45, women physicians and, where possible, qualified laboratory and technical personnel whose employment in appropriate service would release an otherwise essential physician. Everything depends on the willingness of physicians on self analysis supplemented by advice from referees in counties, districts, states and corps areas to determine the physician's own greatest sphere of usefulness. Instructions will soon be issued enabling each physician to align himself with service most consistent with his individual ability and physical equipment. Every physician will receive a certified serial number of his enrolment and an identifying button that only he will be authorized to wear.

Commissions on inactive status are under consideration in the U. S. Public Health Service, to be assigned to needed public health officers, physicians and sanitary engineers in order to have available means for coping with disaster and epidemics.

In order to acquaint the small manufacturers with the benefits of industrial health, it was agreed that some agency for public information be created. It was suggested that failure in this regard might logically lead to compulsory forms of industrial medical service. Specific suggestions included a presidential proclamation, followed by a broad but intensive campaign through newspaper and magazine articles, and organized promotion through local manufacturers' associations, chambers of commerce, civic organizations, medical publicity bureaus and every other accessible avenue. To implement these suggestions it was variously recommended:

(a) That a small conference be called soon in Washington to canvass the possibilities for better coordination in industrial health programs having particular reference to current plans in the Office for Civilian Defense and for creating an agency for public information.

(b) That the facilities of the Federal Security Agency be used to gain the same end.

(c) That the Subcommittee on Industrial Health and Medicine be enabled to employ necessary publicity talent.

(d) That the practicing physician can and must be relied on to provide medical service for small industry and that all programs of publicity and activities both in industrial hygiene and in civilian defense should bear this fact strongly in mind.

Although no precise action was taken, it seemed to be the general opinion that the chairman of the subcommittee inquire further into possibilities and that, if it seemed in the interests of the worker and industry, an agency for the dissemination of industrial health information be created. It seemed also to be the consensus that, if created, this agency should be directly attached to the subcommittee.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bill Introduced.—S. 2394, introduced by Senator Bilbo, Mississippi, provides that the Commissioners of the District of Columbia shall cause to be set up facilities and shall appoint such personnel as they may deem necessary for the scientific determination of the degree of intoxication of motor vehicle drivers. The bill also provides for the admission in evidence of the results of the tests.

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 6730 has passed the House, a bill to protect the public health by regulating the mail order business in dentures. A companion bill, S. 2371, introduced by Senator Tunnell, Delaware, is pending in the Senate Committee on Interstate Commerce.

Bills Introduced.—S. J. Res. 140, introduced by Senator Glass, Virginia, proposes to grant permission to Hugh S. Cumming, Surgeon General (retired) of the United States Public Health Service, to accept certain decorations bestowed on him by the republics of Colombia, Haiti and Chile. S. 2405, introduced by Senator George, Georgia, proposes to discharge more effectively the obligations of the United States under certain treaties relating to the manufacture and distribution of narcotic drugs, by providing, through a licensure system, for domestic control of the

production and distribution of the opium poppy and its products. S. 2412, introduced by Senator Pepper, Florida, proposes to provide benefits, including medical care, for the injury, disability, death or enemy detention of civilians and for the prevention and relief of civilian distress arising out of the present war.

STATE MEDICAL LEGISLATION

Virginia

Bill Introduced.—S. 141 proposes, among other things, to authorize the state hospital board to establish and maintain outpatient mental hygiene clinics, to establish and maintain mental health programs and services, and to initiate and direct the development of long range programs and plans with respect to mental hygiene and hospital services provided by the state.

Bill Passed.—S. 178, to amend the insurance law, proposes to authorize corporations issuing motor vehicle liability insurance to add endorsements thereto for the issuance of medical, surgical, ambulance or hospital payments to the insured.

Bill Enacted.—H. 171 authorizes the boards of supervisors of certain counties in the state to establish a retirement system for the employees of such counties and to employ such actuarial, medical and legal aid and assistance in establishing and administering such system as it may deem necessary.

WOMAN'S AUXILIARY

WINNERS IN THE HYGEIA CONTEST

The American Medical Association offered \$400 in cash prizes to the state and county auxiliaries which obtained the largest number of subscription credits to *Hygeia*. The contest covered the period from Sept. 1, 1941 to Jan. 31, 1942.

Cash prizes were awarded as follows:

Group 1. Auxiliaries with a membership of from one to thirteen:

First prize, \$40, to Perry County, Mo., Mrs. B. T. Koon, president, Perryville, Mo.

Second prize, \$25, to Cass County, Mo., Mrs. David S. Long, Hygeia chairman, Harrisonville, Mo.

Third prize, \$15, to Childress-Collingsworth-Hall counties, Texas, Mrs. J. A. Odum, Hygeia chairman, Memphis, Texas.

Group 2. Auxiliaries with a membership of from fourteen to twenty-three:

First prize, \$40, to Chelan County, Wash., Mrs. R. S. Mitchell, Hygeia chairman, Wenatchee, Wash.

Second prize, \$25, to Cowlitz County, Wash., Mrs. C. J. Sells, Hygeia chairman, Longview, Wash.

Third prize, \$15, to Twin Falls County, Idaho, Mrs. C. B. Beynier, Hygeia chairman, Twin Falls, Idaho.

Group 3. Auxiliaries with a membership of from twenty-four to forty-two:

First prize, \$40, to Walla Walla Valley, Wash., Mrs. J. T. Rocks, Hygeia chairman, Walla Walla, Wash.

Second prize, \$25, to Bowie-Miller counties, Texas-Ark., Mrs. Ralph Cross, Hygeia chairman, Texarkana, Texas.

Third prize, \$15, to Vermillion County, Ill., Mrs. C. L. Bennett, Hygeia chairman, Danville, Ill.

Group 4. Auxiliaries with a membership of from forty-three to six hundred:

First prize, \$40, to Westmoreland County, Pa., Mrs. I. J. Ober, Hygeia chairman, Greensburg, Pa.

Second prize, \$25, to Buchanan County, Mo., Mrs. Charles H. Werner, Hygeia chairman, St. Joseph, Mo.

Third prize, \$15, to Cook County, Ill., Mrs. Clyde R. Landis, Hygeia chairman, Chicago.

State winners:

First prize, \$40, to state of Washington, Mrs. Delmar F. Bice, Hygeia chairman, Yakima, Wash.

Second prize, \$25, to state of Illinois, Mrs. E. M. Egan, Hygeia chairman, Chicago.

For the third prize, \$15, no state qualified by sending in their quota of subscriptions.

Honorable Mention was given to the following counties:

Santa Barbara County, Calif., Mrs. H. E. Henderson, chairman, Santa Barbara.

Arapahoe County, Colo., Mrs. H. B. Catron, chairman, Englewood.

Richmond County, Ga., Mrs. E. S. Sanderson, chairman, Augusta.

Bannock-Bingham County, Idaho, Mrs. W. W. Beek, chairman, Blackfoot.

Rock Island County, Ill., Mrs. Samuel Brown, chairman, East Moline.

Wayne County, Mich., Mrs. F. T. McCormick, chairman, Detroit.

Muskogee County, Okla., Mrs. J. T. Woodburn, Muskogee.

Mercer County, Pa., Mrs. Paul T. Hope, chairman, Mercer.

Spartanburg County, S. C., Mrs. W. T. Hendrix, chairman, Spartanburg.

Snohomish County, Wash., Mrs. Lewis J. Ferrell, chairman, Everett.

Raleigh County, W. Va., Mrs. A. C. Echols, chairman, Prince.

Brown-Kewaunee-Door counties, Wis., Mrs. L. D. Quigley, chairman, Green Bay.

Other counties that have reached or exceeded their quota were Kern County, Calif.; Monterey-San Benito County, Calif.; Riverside County, Calif.; Duval County, Fla.; Sangamon County, Ill.; Dubuque County, Iowa; Shawnee County, Kan.; Renville County, Minn.; Greene County, Mo.; Jackson County, Mo.; Montgomery County, N. Y.; Pottawatomie County, Okla.; Marion-Polk County, Ore.; Berks County, Pa.; Bucks County, Pa.; Crawford County, Pa.; Mifflin County, Pa.; Clark County, Wash.; King County, Wash.; Pierce County, Wash.; Whitson County, Wash.; Yakima County, Wash.; Kenosha County, Wis.; Racine County, Wis.; Rock County, Wis.

This year's contest resulted in eight thousand one hundred and seventy-four subscriptions.

To the Hygeia chairmen, officers and members of the various county and state woman's auxiliaries who have assisted in making this contest a success, Mrs. George R. Dillinger, national Hygeia chairman, and the circulation manager of *Hygeia* express appreciation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

New Health Officer for Birmingham.—Dr. George A. Denison, acting health officer of Birmingham and Jefferson County since September, has been appointed health officer, effective February 25. Dr. Denison graduated at Baylor University College of Medicine, Dallas, Texas. He has been connected with the Jefferson County health unit since 1921. From 1931 until his appointment as acting health officer he served as director of the bureau of laboratories.

State Medical Meeting in Montgomery.—The annual session of the Medical Association of the State of Alabama will be held at the Whitley Hotel, Montgomery, April 21-23, under the presidency of Dr. James M. Mason, Birmingham, and with the Montgomery County Medical Society acting as host. Included among the speakers will be:

Dr. Ralph McBurney, Tuscaloosa, A Clinical Evaluation of the Erythrocyte Sedimentation Rate.

Dr. Henry B. Burdeshaw, Dothan, Blood and Blood Substitutes in the Treatment of Hemorrhage and Shock.

Drs. Frank A. Kay, James D. Smith and Norman H. Reim, Tuscaloosa, Electric Shock Treatment in Psychiatric Disorders.

Dr. French H. Craddock Jr., Sylacauga, Intravenous Alcohol in Post-operative Analgesia.

Dr. Ralph M. Clements, Tuscaloosa, A Newer Treatment for Pseudo-Typhoid.

One general session will be addressed by out of state physicians, Drs. Edward L. Compere, Chicago, speaking on "The Treatment of Compound Fractures" and Frank E. Adair, New York, "Carcinoma of the Breast." Part of another general session will be devoted to a panel discussion on poliomyelitis by Drs. Daniel G. Gill, Montgomery, epidemiology; Albert E. Casey, New Orleans, pathology; Carl A. Grote, Huntsville, the acute state, and H. Earle Convell, Birmingham, muscular rehabilitation. Dr. Harvey B. Stone, Baltimore, will deliver the Jerome Cochran Lecture Wednesday morning on "Biliary Diseases as Seen by the Surgeon."

CONNECTICUT

Section for Industrial Physicians.—With the February issue, *Connecticut Industry*, official organ of the Manufacturers Association of Connecticut, will conduct a regular column to promote an exchange of ideas among industrial physicians to help further the adoption of improved industrial medical procedures in Connecticut industries.

Grant for Research on Child Development.—The Carnegie Corporation of New York has given a grant of \$10,000 to support a research program at the Clinic of Child Development at Yale University School of Medicine, New Haven. The clinic, which was founded in 1911 by Dr. Arnold L. Gesell, its present director, is investigating the mental growth of normal infants and devising clinical methods for the early diagnosis of developmental defects and deviations. Staffed by pediatricians and psychologists, it maintains a diagnostic and advisory service for infants and preschool children, a guidance nursery, a photographic research library and special facilities for one way vision observation and for systemic studies of normal and abnormal child behavior.

DISTRICT OF COLUMBIA

Biochemist Receives Hillebrand Award.—Michael X. Sullivan, Ph.D., since 1931 director of the Chemo-Medical Research Institute, Georgetown University School of Medicine, Washington, was presented with the Hillebrand Award of the Chemical Society of Washington at the annual dinner, March 12, for his work on the "Sulfur-Containing Substances of the Body." Dr. Sullivan received his Ph.D. at Brown University, Providence, R. I., in 1903. He served as fertility expert at the Bureau of Soils, U. S. Department of Agriculture, from 1907 to 1915 and as biochemist to the U. S. Public Health Service from 1915 to 1931. He was president of the Washington Section of the American Chemical Society in 1914.

Hospital Meeting.—The fifth annual meeting of the Medical Society of St. Elizabeths Hospital, Washington, will be addressed, April 18, by Dr. Lucille Dooley, Washington, on "Psychoanalytical Concepts of Manic Depressive Psychosis";

Nathan Bryllion Fagin, Ph.D., Baltimore, "The Influence of Psychoanalysis on Modern Literature"; Dr. Uno H. Helgeson, Commander, U. S. Naval Reserve, Washington, "Acute Traumatic Neuroses Following Combat," and Dr. Winfred Overholser, Washington. Elmer Louis Kayser, Ph.D., Washington, will be the speaker at the annual dinner.

FLORIDA

State Medical Meeting in Hollywood April 13-15.—The sixty-ninth annual meeting of the Florida Medical Association will be held at the Hollywood Beach Hotel, Hollywood, April 13-15, under the presidency of Dr. Walter C. Jones Jr., Miami. The Palm Beach County Medical Society will be host at the session. Included among the speakers will be:

Dr. Lauren M. Sompayrac, Lieutenant, U. S. Navy, Naval Hospital, Jacksonville, The Dermatologist in the Navy.

Dr. James A. Bradley, St. Petersburg, Bed Rest in Coronary Thrombosis.

Dr. Nathan S. Rubin, Major, U. S. Army, Station Hospital, Panama City, Some Medical Problems of Flight.

Dr. Daniel C. Elkin, Atlanta, Ga., Injuries of the Chest.

Dr. Harold G. Nix, Tampa, Use of Vitamin K in Obstetrics.

Drs. Wilfred McL. Shaw and William Tracy Haverfield, Jacksonville, Roentgen Aids in the Diagnosis and Localization of Intracranial Conditions.

Dr. Warren W. Quillian, Coral Gables, Pyurias in Childhood: Their Significance and Treatment.

Other groups meeting at this time include the Florida section of the American College of Physicians, the Florida Radiological Society, the Florida Pediatric Society and the Florida Association of Dermatology and Syphilology. Dr. Cornelius F. Holton, Savannah, Ga., will discuss "Industrial Surgery" before the Florida Association of Industrial Surgeons, and Dr. Frank E. Burch, St. Paul, "Cataracts" and "Glaucoma" before the Florida Society of Ophthalmology and Otolaryngology. The sixteenth annual meeting of the woman's auxiliary to the state medical association will be held, April 13-15.

ILLINOIS

Change in Hospital Superintendents.—Dr. Joseph H. Ellingsworth, Geneseo, has been appointed managing officer of the Peoria State Hospital, succeeding Dr. Philip Waters, who has assumed a similar position at the East Moline State Hospital. Dr. Waters fills the vacancy that occurred when Dr. Joseph A. Campbell resigned.

Coordinators Named to Protect Water Supply.—A group of coordinators from ten emergency water corps zones has been appointed to work toward the protection and conservation of existing water supply systems in more than six hundred down state municipalities. A meeting was held in Springfield, March 12, under the auspices of the state department of health to map out regulations and programs for local application.

Chicago

Society News.—Dr. Frederic Schreiber, Detroit, discussed "Clinical Relationship Between Cerebral Anoxia and Anesthesia" before the Chicago Society of Anesthetists, February 25.—The Chicago Laryngological and Otological Society was addressed, March 2, by Drs. John H. Gilmore on "X-Ray Studies in Mastoid Pathology"; Oliver McGillivuddy, Lansing, Mich., "Encephalomenigeoceles in the Nasal Cavities," and Mauritius Tamari, "Histopathologic Changes of the Temporal Bone in Paget's Disease."—The Illinois Psychiatric Society, March 5, was addressed by Drs. Milton Rosenbaum, Cincinnati, "Adaptation of the Central Nervous System to Alcohol"; James Clark Moloney, Detroit, "Unconscious Motivations for the Choice of Employment," and Maxwell Gitelson, "The Critical Moment in Psychotherapy."—The North Shore Branch of the Chicago Medical Society will be addressed at the Sovereign Hotel, April 7, by Dr. Bayard T. Horton, Rochester, Minn., on "Headaches: Clinical Types and Treatment." The North Side Branch was addressed, March 5, by Drs. Ernest H. Falconer, San Francisco, on "Hodgkin's Disease, with Special Reference to Skeletal and Bone Marrow Involvement" and Edward L. Bortz, Philadelphia, "Geriatrics: A New Light on Old Folks."

LOUISIANA

State Medical Meeting.—The Louisiana State Medical Society will hold its annual meeting in New Orleans, April 27-29, under the presidency of Dr. Paul King Rand, Alexandria. Among the out of state speakers will be Dr. Jacob Arnold Bargen, Rochester, Minn., on "The Use of Sulfonamide Derivatives in the Digestive Tract"; Charles T. Stone, Galveston, Texas, "The Future of the Coronary Thrombosis Patient"; Adolph B. Loveman, Louisville, "Some Cutaneous Manifestations of Systemic Disorders," and Roy F. Baskett, Texarkana,

Ark., "The Use of the Various Insulins in the Treatment of Diabetes Mellitus." The program will include the following local physicians:

Dr. Frank L. Loria, New Orleans, Abdominothoracic Gunshot Injuries.
Drs. Bjarne Pearson and Manuel M. Garcia, New Orleans, Spread and Metastasis in Carcinoma of the Cervix Uteri.
Drs. Daniel N. Silverman, Robert A. Katz and Andrew V. Friedrichs, New Orleans, The Increasing Incidence and Complications of Chronic Bacillary Dysentery.
Dr. Charles R. Gowen, Shreveport, The Rational Management of Bronchiectasis.
Drs. Louis S. Charbonnet Jr. and George F. Schroeder, New Orleans, The Physiologic Conception of Tissue Resistance in the Surgical Diabetic.

One session will be devoted to a symposium on "Health Protection of Civilians in the Present War" to cover the subjects of nutrition, emergency water supply and sewage disposal, potential epidemics in Louisiana, protection by immunization and provisions for children.

MICHIGAN

New Director of Epidemiology.—Dr. Thaddeus M. Koppa, assistant director of epidemiology, Michigan State Department of Health, Lansing, has been appointed director, newspapers report. He succeeds Dr. Wallace M. Chapman, who has resigned to enter private practice in California. Dr. Chapman was named to the position last year.

Health Center Opened.—The new Delta County Health Center at Escanaba was opened formally to the public on February 28. The center is in a former school building, which was remodeled to meet the needs for offices of the county school commissioner and for the health unit of the county. There are six rooms, a library and a meeting room with a seating capacity of between seventy-five to one hundred persons. Dr. Fred O. Tonney, Escanaba, is director of the county health unit.

MINNESOTA

Meeting of Radiologists.—The spring meeting of the Minnesota Radiological Society was held at the Mayo Foundation House, Rochester, March 28. The speakers included the following Rochester physicians:

Drs. William C. MacCarty Jr. and Byrl R. Kirklin, Radiologic and Pathologic Studies of Prepyloric Ulcer.
Drs. Frank J. Rigos, Oak Terrace, and John D. Camp, Primary Tumors of the Ribs.
Drs. James T. Sheldon and Walter C. Popp, X-Ray Treatment of Erysipelas.
Drs. Robert D. Moreton and Eugene T. Leddy, Dysgerminomas with Reference to Radiosensitivity.
Drs. George R. Dochat and Malcolm B. Dockerty, Prognosis in Carcinoma of the Stomach in Relationship to Duke's Type and Broder's Grade of Malignancy.

At the evening session Dr. Patrick P. T. Wu, Tsang, Peiping, China, gave an address entitled "China Speaks."

MISSOURI

State Meeting in Kansas City April 27-29.—The annual session of the Missouri State Medical Association will be held in the Municipal Auditorium, Kansas City, April 27-29, under the presidency of Dr. Robert B. Denny, Creve Coeur. Out of state speakers will include:

Dr. Karl W. Brimmer, Washington, D. C., Faith, Hope and Cure—Alls.
Dr. William Walters, Rochester, Minn., Gastric Ulcer.
Dr. Willard R. Cooke, Galveston, Texas, Three Important Advances in Obstetric Therapy: Analgesia, Intravenous Ergotrate in Third Stage of Labor, Magnesium Sulfate in Eclampsia.
Dr. George R. Herrmann, Galveston, Some Medical Emergencies and Their Management.
Dr. Russell L. Haden, Cleveland, The Differentiation of Obstructive Anemia.
Dr. Cobb Pilcher, Nashville, Tenn., Neurosurgery in the War.
Dr. Joe Vincent Meigs, Boston, Endometriosis.
Dr. Arthur Purdy Stout, New York, Clinical Diagnosis of Cancer of the Breast.
Dr. Robert Elman, St. Louis, The Correction of Acute Protein Deficiency in the Treatment of Surgical Shock, Severe Hemorrhage and Burns.
Dr. Hobart A. Reinmann, Philadelphia, Practical Aspects of Newly Discovered Forms of Pneumonia.
Dr. Harris B. Shumac, Value of Sympathectomy in the Treatment of ders.
Dr. Irvine H. Page, and Its Experimental Treatment.
Dr. Raymond O. Muelther, St. Louis, Blood Banks.
Dr. Oliver Cope, Boston, Hyperthyroidism.
Dr. William B. Kountz, St. Louis, The Recognition and Treatment of Degenerative Health Disease.
Donald E. Cummings, B.S., Denver, Industrial Health.

The annual banquet, Monday evening, will be addressed by Dr. George F. Lull, colonel, M. C., U. S. Army, Washington, D. C., on "The Medical Officer in Our Wartime Army." Dr. Willard R. Cooke will also address the maternal welfare luncheon meeting.

NEW HAMPSHIRE

Changes in Board of Health.—Dr. Ralph E. Miller, associate professor of pathology and assistant dean of Dartmouth Medical College, Hanover, has been chosen president of the state board of health to succeed Dr. George C. Wilkins, Manchester, who retired after serving in this capacity for many years. The latter had been a member since 1915. Dr. Montfort Haslam, Antrim, has been named a member of the board, succeeding Dr. James W. Jamson, Concord, a member since 1933, who also retired.

NEW JERSEY

Health Officers Association.—Mr. W. Stanley Applegate, Asbury Park, was elected president of the New Jersey Health Officers' Association, succeeding Mr. Harold W. Hager, Ocean City; Mr. Hugh B. Martin, Englewood, was elected vice president and Mr. William C. Black, Princeton, reelected secretary-treasurer.

NEW YORK

Public Sunday Medical Lectures.—As a public service and a contribution to the war effort, the University of Buffalo School of Medicine, Buffalo, recently conducted a series of five public lectures on "The Care of Your Health During the War." The lectures, which were given in the amphitheater of the medical school, started on February 8. The medical school gave a course of public lectures last year also as a community service.

Fifty Years as Health Officer.—Dr. Morris W. Cowden, Gerry, Chautauqua County, was recently presented with a testimonial letter by Dr. Edward S. Godfrey Jr., state health commissioner, "in recognition of fifty years of faithful and continuous service as health officer." Dr. Cowden graduated at the University of Buffalo School of Medicine in 1890. He had been practicing in Gerry for two years when he was named health officer. Dr. Cowden has retired from active practice but still carries on as local health officer.

Maternal and Child Welfare Teaching Day.—A group of local agencies sponsored a regional maternal and child welfare teaching day at the Rochester General Hospital, Rochester, April 1. Included among the speakers were:

Drs. Donald H. Kariher and Howard A. Spindler, Rochester, The Role of the Blood Rh Factor in Transfusion Reactions and Erythroblastosis Fetalis.
Dr. John M. MacMillan, Rochester, Tuberculosis and Pregnancy.
Dr. Herbert C. Soule, Rochester, The Care of the Premature Infant.
Dr. Charles S. Lakeman, Rochester, The Diagnosis and Treatment of Thrombophlebitis.
Dr. Clarence Arthur Elden, Rochester, The Treatment of Habitual Abortion.
Dr. Ferdinand J. Schoeneck, Syracuse, Demonstration of Case Study.

Dr. Harvey B. Matthews, Brooklyn, clinical professor of obstetrics and gynecology, Long Island College of Medicine, addressed the evening session at the Rochester Academy of Medicine on "Prolonged Labor: Etiology and Management."

New York City

The Janeway Lectures.—The annual Edward Gamaliel Janeway Lectures at Mount Sinai Hospital will be delivered by Michael Heidelberger, Ph.D., associate professor of biochemistry, Columbia University College of Physicians and Surgeons, April 7 and April 10. His subject will be "Newer Concepts of Infection and Immunity and Chemistry's Part in Their Development."

Physician Wins Town Hall Essay Contest.—Dr. Jacob Sobel, attending pediatrician at the Hospital for Joint Diseases and Beth David Hospital and director of pediatrics at Gouverneur Hospital, recently won first prize of \$250 in the national essay contest sponsored by Town Hall in connection with its radio forum, America's Town Meeting of the Air. The subject was "What Must We Do to Improve the Health and Well-Being of the American People?" Dr. Sobel graduated at Columbia University College of Physicians and Surgeons in 1895.

Dr. Bernecker New Commissioner of Hospitals.—Dr. Edward M. Bernecker, general medical superintendent for the city department of hospitals, has been named commissioner of hospitals to succeed Dr. Willard C. Rappleye, resigned. Born in Seward, Neb., March 13, 1892, Dr. Bernecker graduated at the Halmemann Medical College and Hospital in Chicago in 1915. He served his internship at Metropolitan Hospital. In 1917 he entered the U. S. Army and was appointed a surgeon in the air service. According to the New York Times he was stationed in the second A. E. F. training section at Tours in France and later was appointed a battalion surgeon in the second division. After the war he returned to Metropolitan

Hospital as deputy superintendent, becoming superintendent in 1930. In 1935 he became deputy superintendent of the Kings County Hospital, leaving the position in 1937 to become general medical superintendent for the department of hospitals.

Professional Service Building Dedicated.—The Hospital for Joint Diseases February 7 dedicated its new professional service building, the Melanie Faith Polachek Courmand Memorial. The building is seven stories high and contains professional facilities and services to serve both outpatients and inpatients. The first floor contains emergency room, admitting offices for ward patients, medical emergency field unit and the central offices of the social service department. The physical therapy department is on the second floor and the radiology service on the third. The Women's Division, including facilities for about two hundred and fifty women volunteers, sewing rooms for hospital linens, patients' circulating library and reading room and the occupational therapy department, is on the fourth floor. The fifth floor contains a blood bank, bacteriology laboratory and an auditorium; the sixth, laboratories for surgical pathology, clinical pathology and research; the seventh, animal operating rooms. The various units were financed by individual donors.

Physicians Honored by Polyclinic Hospital.—Exercises were held at the Polyclinic Medical School and Hospital, February 10, to honor twenty-three physicians and surgeons "deemed to have contributed most toward the creation" of the hospital. Portraits of the physicians were unveiled. Dr. Orrin S. Wightman, formerly president of the state medical society, presented the portraits to the hospital and Dr. Joseph F. McCarthy, president of the faculty, accepted the gift, which is said to represent graphic portrayal of the sixty-one year history of Polyclinic Hospital. The complete list of those whose portraits appear in the gallery follows: Drs. Willard Parker, Paul F. Munde, Andrew R. Robinson, Landon Carter Gray, Abraham Jacobi, Walter Gill Wylie, Arpad G. Gerster, Virgil P. Gibney, D. Bryson Delavan, Luther Emmett Holt, Bernard Sachs, James P. Tuttle, James Riddle Goffe, William Rice Pryor, Robert C. Myles, Frederick Whiting, Charles Gilmore Kerley, John A. Bodine, Royal Whitman, Orrin S. Wightman, Frederick H. Dillingham, John Allen Wyeth and Harry Marion Sims. With the exception of seven men, Drs. Delavan, Sachs, Whiting, Kerley, Whitman, Wightman and Dillingham, the honored men are dead.

OHIO

Regional Meeting on Anesthesia.—The American Society of Anesthetists, Inc., the Ohio State Section of the national society and the Ohio Society of Anesthetists will meet at the Neil House, Columbus, April 30, for the following program:

- Dr. Norris E. Lenahan, Columbus, Intravenous Anesthesia.
- Dr. Harold D. Green, Cleveland, Shock.
- Dr. James H. Bennett, Cincinnati, The Anesthetic Management for Drainage of Abscess of the Submandibular Space.
- Dr. Kenneth C. McCarthy, Toledo, Casualty Anesthesia in England.
- Drs. John K. Potter and Reynold M. Crane, East Cleveland, Anesthesia in Thyroid Surgery.
- Dr. Abe L. Schwartz, Cincinnati, The Use of PicROTOXIN in Barbiturate Poisoning.

New Professor of Dermatology and Syphilology.—Dr. Harry L. Claassen, assistant professor of dermatology and syphilology at the University of Cincinnati College of Medicine, has been promoted to professor, effective March 3. He fills the vacancy caused by the death of Dr. Elmore B. Tauber, Jan. 23, 1941. Dr. Claassen has been assistant professor and acting head of the department. With his promotion Dr. Claassen also became director of the service of dermatology and syphilology in the Cincinnati General Hospital. He graduated at Cincinnati in 1918 and has been a member of the staff since 1922.

Annual Postgraduate Day.—The Mahoning County Medical Society will observe its annual postgraduate day at the Pick-Ohio Hotel, Youngstown, April 15, with the following program:

- Dr. Jacob R. Buchbinder, Acute Diffuse Peritonitis: Pitfalls in Diagnosis and Some More Recent Concepts of Treatment; Present Status of Surgery for Duodenal Ulcer.
- Dr. Harry Culver, Traumatic Conditions of the Male Urethra and Bladder; Nonspecific Upper Urinary Tract Infections.
- Dr. Paul S. Rhoads, Clinical Feature and Treatment of Pneumonia, 1941-1942 Season; Hemolytic Streptococcus Infections of the Throat and Nose: Their Importance as a Clinical and Public Health Problem.
- Dr. George H. Gardner, Pelvic Endometriosis—An Increasingly Frequent Clinical Problem; Management of the Barren Marriage.

All the speakers are members of the faculty of Northwestern University Medical School, Chicago.

OREGON

Annual Meeting of Surgeons.—The annual session of the Spokane Surgical Society will be held at the Davenport Hotel, Spokane, April 25, with Dr. Richard B. Cattell, Boston, as the guest speaker. The titles of Dr. Cattell's lectures will be "Diseases of the Thyroid Gland," "Common Duct Obstructions" and "Selection of Operation for Carcinoma of Colon and Rectum."

WISCONSIN

New Tuberculosis Officers.—Dr. George C. Owen, Oshkosh, was recently elected president of the Wisconsin Trudeau Society; Dr. Einar R. Daniels, Milwaukee, vice president, and Dr. John D. Steele Jr., Milwaukee, secretary.

Dearholt Fund to be Continued.—The Dearholt Memorial Fund, established by the late Dr. Hoyt E. Dearholt, Milwaukee, former executive secretary of the Wisconsin Anti-Tuberculosis Association, will be maintained permanently, it has been announced. Tuberculosis institutes at Marquette University School of Medicine, Milwaukee, and the University of Wisconsin Medical School, Madison, as well as at sanatoriums throughout the state, are made possible by the fund. Dr. Dearholt started the fund by making deductions from his salary as secretary of the association.

Physician Honored.—More than a hundred former patients of Dr. George V. I. Brown gave a dinner in his honor in Milwaukee, February 15. Dr. Brown, who is 80 years of age, recently retired from active practice and is doing consultation work only. He was professor of oral and plastic surgery at the University of Wisconsin Medical School, Madison, from 1920 until he retired as emeritus professor in 1937. During World War I he was called to the Office of the Surgeon General, Washington, as chief of the plastic and oral service at Walter Reed Hospital. Under the orders of General Gorgas he established a school for training men in plastic surgery at Fort Oglethorpe, Ga., before they went overseas.

GENERAL

Blood Plasma Package Wins Award.—Sharp and Dohme, Inc., was given the top award in the drugs, chemicals and drug sundries classification of the eleventh annual All-America Package Competition sponsored by *Modern Packaging Magazine* recently for a package developed to supply dehydrated human blood in a portable, practical and stable form for use in war and civilian practice. The package is supplied as a complete unit with the exception of the intravenous outfit, which is supplied in a separate package and is always included with each order unless otherwise specified.

Grants for Research.—William R. Warner & Company, Inc., New York, has announced grants for medical research as follows:

The Long Island College of Medicine, Brooklyn, a two year fellowship for postgraduate study in the department of radiology.

New York University College of Medicine, New York, for the study of the conjugation of the sulfonamide drugs. This study will be carried out in the pneumonia service of the Harlem Hospital.

Northwestern University Medical School, Chicago, for the study of toxic factors as observed in the department of dermatology investigating the possibilities of detoxifying therapeutic agents used in the practice of dermatology.

Washingtonian Hospital, Boston, for the study of alcoholism involving the blood chemistry and psychometric findings of cases while under the influence of alcohol and during recovery.

Changes in Status of Licensure.—The California State Board of Medical Examiners reports the following:

Dr. Howard D. Mayers, Fall River Mills, license revoked, Oct. 22, 1941, for habitual intemperance.

Dr. Frederick William Riley, Los Gatos, license revoked Oct. 23, 1941, charged with aiding and abetting an unlicensed individual, i. e. William F. Hoque, who operated the Valley Rest Home, Los Gatos, where patients were treated with an escharotic paste as an asserted "cure" of cancer.

Dr. Oscar Charles Long, Brawley, license restored October 21; he was placed on five years' probation without narcotic privileges and ordered to report at each Los Angeles meeting.

The Medical Grievance Committee of the New York State Education Department announces the following action:

Dr. Archie Max Fisher, Spencer, N. Y., license revoked in September 1941 for drug addiction.

Director of Planned Parenthood Federation Appointed.—Dr. Claude C. Pierce, until March 1 medical director of the U. S. Public Health Service in charge of district number 1, New York, has been appointed national medical director of the Planned Parenthood Federation of America, Inc., formerly known as the Birth Control Federation of America, Inc., according to an announcement from the society's headquarters in New York. Dr. Pierce graduated at Chattanooga Medical College in 1898. In 1900 he joined the public health service.

In 1918 an act passed by congress creating the United States Interdepartmental Social Hygiene Board became a law. This included the establishment of a division of venereal diseases in the U. S. Public Health Service. Dr. Pierce organized and directed this division as assistant surgeon general in charge for four years, serving also during that time as a member of the Interdepartmental Social Hygiene Board. When the newly created position of district director was established in 1922 he was assigned to Chicago in charge of district number 3. Later he went to Mexico and Cuba to confer with government authorities on sanitary conditions and quarantine restrictions. In 1926 he was assigned to Washington as assistant surgeon general in charge of personnel and accounts. Subsequently he went to Europe for supervision of medical inspection of aliens. In 1937 he was relieved of duty in Europe and assigned as director of public health district number 1 with headquarters in New York City.

Educational Program on Diabetes.—The Metropolitan Life Insurance Company has been conducting an educational program on diabetes during the past year. More than one and one-half million pamphlets were distributed to the public and to interested physicians. New publications for the public were printed. Exhibits, conferences and correspondence were used to interest health officers and health departments in diabetes control. About one hundred and ten meetings have been addressed by the company's examiners or other physicians. A number of state medical societies actively participated in the program. The objectives of this program are a wider recognition of incipient symptoms, the early detection of disease by medical examination and urinalysis, a closer working relationship between the potential or actual diabetic patient and the private medical practitioner, and more thorough and adequate treatment with postponement of mortality, together with more widespread information about the possible preventive factors.

American Pediatric Society.—The fifty-fourth annual meeting of the American Pediatric Society will be held at Skytop, Pa., April 30-May 2. There will be a symposium on children in the civilian defense program and one on the control of communicable diseases in defense areas and among civilian populations. Among the speakers will be:

- Drs. Clement A. Smith and Eugene Kaplan, Boston, Adjustment of Blood Oxygen Levels in Neonatal Life.
Dr. Henry F. Helmholz, Rochester, Minn., Experimental Studies in Treatment of Urinary Infections.
Dr. Lewis K. Sweet, Washington, D. C., Chemotherapy in Acute Gonococcal Conjunctivitis.
Drs. Luther Emmett Holt Jr. and Victor A. Najjar, Baltimore, A Simple Method for the Laboratory Diagnosis of Deficiencies of Thiamine, Riboflavin and Nicotinic Acid.
Dr. Harold L. Higgins, Boston, Some Physiologic Aspects of Acidosis.
Dr. Arthur F. Abt, Dr. L. Marlin Hardy, Chester J. Farmer, A.M., and Jessie D. Maske, all of Chicago, Relation of Vitamin C to Scarlet Fever, Rheumatic Infections and Diphtheria in Children.
Drs. Harold K. Faber and Edward B. Towne, San Francisco, Surgical Treatment of Cranial Synostosis with Special Reference to Prevention of Blindness.
Dr. Bert I. Beverly, Chicago, Anxieties in Childhood.

Annual Meeting of College of Physicians.—The twenty-sixth annual session of the American College of Physicians will be held at the Municipal Auditorium in St. Paul, April 20-24, under the presidency of Dr. Roger I. Lee, Boston. "Medical Horizons" is the theme of the meeting. The program of the general sessions complements that of the clinics, panel discussions and morning lectures, which will be held throughout the week. Included among the speakers of the six general sessions will be:

- Drs. Edgar V. Allen and Nelson W. Barker, Rochester, Minn., Clinical Studies on the Prevention of Venous Thrombosis and Pulmonary Embolism by the Use of a Preparation from Spoiled Sweet Clover Which Prolongs Coagulation and Prothrombin Time of the Blood.
Dr. Oswald F. Hedley, Bethesda, Md., U. S. Public Health Service, The Fraudulent Use of Digitalis to Simulate Heart Disease.
Dr. Walter S. McClellan, Saratoga Springs, N. Y., New Trends in Treatment of Chronic Disease; An Experience in Spa Therapy.
Dr. Martin Henry Dawson, New York, Penicillin as a Chemotherapeutic Agent.
Dr. Chester S. Keefer, Boston, Gramicidin in the Treatment of Local Infections.
Dr. Nathan S. Davis III, Chicago, Factors Which May Influence Senescence.

A symposium on aviation medicine will constitute the afternoon's program at the first general session Monday with the following speakers: Drs. Louis H. Bauer, Hempstead, N. Y., on "A Brief History of Aviation Medicine and the Physical Qualifications for Flying"; John R. Poppen, captain, M. C. U. S. Navy, Washington, D. C., "Effects of High Speed Including Dive Bombing; Acro Embolism," and Harry G. Armstrong, M. C. U. S. Army, Randolph Field, Texas, "Want and the Use of Supplementary Oxygen." On Wednesday afternoon another general session will be devoted to communicable

diseases. At the annual convocation on Wednesday evening, Dr. Lee will deliver his presidential address and Dr. William deB. MacNider, Kenan research professor of pharmacology, University of North Carolina School of Medicine, Chapel Hill, N. C., will give the convocation address on "A Consideration of the Factor of Change in the Animal Organism." The John Phillips Memorial Medal for 1941-1942 will be presented at this meeting.

The Nutrition Foundation.—Sixteen food companies recently cooperated in creating the Nutrition Foundation, Inc., to develop and apply the science of nutrition for the improvement of the diet and health of the American people. Officers include George A. Sloan, New York City Commissioner of Commerce, president; Charles Glen King, Ph.D., professor of chemistry, University of Pittsburgh, vice president; Ole Saltho, formerly director of the Bureau of Food and Drugs, Department of Health, New York, and more recently consultant of the Food and Drug Administration, Federal Security Agency, Washington, D. C., executive secretary, and Karl T. Compton, Sc.D., Cambridge, Mass., president of the Massachusetts Institute of Technology, chairman of the board. The new group held its inaugural dinner on March 12 in New York. On March 16 the organization of a scientific advisory committee for the foundation was announced. Members are Dr. Frank G. Boudreau, executive director, Milbank Memorial Fund, New York; Conrad A. Elvehjem, Ph.D., University of Wisconsin, Madison; Icie M. Hoobler, Ph.D., Children's Fund of Michigan, Detroit; Paul E. Howe, Ph.D., Surgeon General's Office, U. S. Army, Washington, D. C.; Elmer V. McCollum, Ph.D., Johns Hopkins University School of Hygiene and Public Health, Baltimore; Leonard A. Maynard, Ph.D., Cornell University, Ithaca, N. Y.; John R. Murlin, Ph.D., University of Rochester, Rochester, N. Y.; Roy C. Newton, Ph.D., Swift & Co., Chicago; Lydia J. Roberts, Ph.D., Department of Home Economics, University of Chicago; William C. Rose, Ph.D., University of Illinois, Urbana, Ill.; Dr. William H. Sebrell Jr., U. S. Public Health Service, Washington, D. C.; Henry C. Sherman, Ph.D., Columbia University, New York; Dr. Frederick F. Tisdall, University of Toronto, Toronto, Canada, and Robert R. Williams, Sc.D., chemical director, Bell Telephone Laboratories, New York. There is also a food industries advisory committee. The sixteen founder companies of the new foundation have guaranteed \$10,000 a year each for over a five year period, although it is hoped that eventually increased funds will be received to expand both research and service. Membership in the foundation of the corporation is to consist of three classes: founder members, sustaining members and public members. There shall be one annual meeting of the corporation.

LATIN AMERICA

Committee for Medical Defense.—The Medical Federation of Cuba recently formed a committee on medical defense with Dr. Pedro L. Farinas Mayo, Havana, Cuba, as director. A meeting was held January 23 by Drs. Moisés Chediak, Havana, on "National Organization of Departments for Blood Transfusion," and Guillermo López Roviroso, Havana, on "Importance of Establishing Laws for Food Rations in Any Possible Difficulties."

Deaths in Other Countries

Sir Henry Britten Brackenbury, chairman of the council of the British Medical Association; from 1915 to 1924 chairman of the Insurance Acts Committee and until 1927 chairman of its representative body; member of the General Medical Council and of the advisory committee to the Ministry of Health; practiced general medicine from 1892 to 1927; mayor of the borough of Hornsey, 1895-1896, and alderman till 1930; died at his home in Yeovil, Somerset, England, March 10, aged 76.

Government Services

Mobile Unit Used in Industrial Hygiene Service

The mobile unit of the Division of Industrial Hygiene of the National Institute of Health has just completed a survey covering fifteen plants and eight states. The five plants surveyed in Alabama top the number for any individual state. Three plants in Arkansas were included, two in Louisiana and one each in Mississippi, West Virginia, Kentucky, Oklahoma and Tennessee. A physician and an engineer were in charge of the survey.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 14, 1942.

An Official Medical History of the War

The work of compiling an official medical history of the war has begun. An editorial board under the chairmanship of the president of the board of education and composed of representatives of the fighting services, the Ministry of Health, the Department of Health of Scotland, the Committee of Imperial Defense and the Medical Research Council has been set up by the war cabinet to direct the preparation of a medical history of the war. This board will have the active collaboration of authoritative bodies and experts. They have met and discussed the scope and plan of the undertaking, the value of such a record made during the war and the war's contribution to medical science. Sir Arthur MacNalty, recently chief medical officer of the Ministry of Health, has been appointed editor in chief, and representatives have been appointed by the service departments concerned. The collection and classification of material has already begun. Much material on medical wartime problems exists and, of course, will grow as the war progresses. The editorial board hopes for the full support and cooperation of the medical profession and requests copies of published articles, reports and other information from health officers and physicians which may be of use in assembling material for the medical historians. They are invited to send it to the Editor in Chief, Medical History of the War, Room 208, Caxton House West, Tothill Street, London, S.W. 1.

The Sprue Syndrome

In *Guy's Hospital Reports* Sir Arthur Hurst describes an important advance which unifies the pathogenesis of the two sprue diseases and celiac disease. He points out that three constant and characteristic features are common to sprue, nontropical sprue and celiac disease and they require explanation in any theory explaining their pathology: 1. The stools contain an excess of split fat but no excess of neutral fat, meat fibers or starch, and no inflammatory material. 2. Roentgenography shows disappearance of the normal feathery or herring bone aspect of the duodenum and jejunum due to the valvulae conniventes. 3. No pathologic changes are found in the intestine after death if postmortem changes have been prevented. Under adequate treatment normal absorption of fat is restored with normal roentgenographic appearances. Hurst therefore concludes that tropical sprue, nontropical sprue and celiac disease are varieties of the same disorder—"the sprue syndrome"—and differ only in the part of the world in which the disease originates and the age of the patient. The characteristic features of the sprue syndrome are the result of paralysis of the muscularis mucosae, which would lead to loss of the pumping action of the villi, by means of which fat is conveyed from the lacteal radicles of the villi into the larger lacteals and to flattening of the valvulae conniventes without changes in normal appearance of the mucous membrane. Paralysis of the muscularis mucosae may be secondary to loss of the normal stimulant of Meissner's (submucosal) plexus or to the effect of vitamin deficiency or some toxemia on the plexus. An exception must be made for those cases of the sprue syndrome associated with disease of the mesenteric glands. Here the hindrance to fat absorption occurs at the level of the mesenteric glands instead of in the villi.

The Danish physician T. E. H. Thaysen previously (1932, 1935) gave good reasons for regarding sprue, nontropical sprue and celiac disease as varieties of the same disease. Celiac disease differs from sprue only in showing characteristics

depending on its occurrence in young and growing children. There is no difference between celiac disease in European children whether it develops in the tropics, when it is likely to be called sprue, or in Europe, or between tropical and so-called nontropical sprue. As Thaysen has pointed out, the tendency to regard diseases more common in the tropics as differing fundamentally from similar ones occurring in nontropical countries is quite unjustifiable. It has gradually been recognized that true beriberi occurs in England and even in Iceland and Newfoundland as well as in hot climates whenever the essential dietetic deficiency is present. The same holds for pellagra, which was long regarded as a purely tropical disorder. Thaysen gave the name idiopathic steatorrhea to the group of diseases comprising sprue, nontropical sprue and celiac disease. But this does not give any indication that the steatorrhea consists in the excretion of split fat in the excretion form of fatty acids and soaps and not of neutral fat.

Canadian Orthopedic Unit for Scotland

An appeal to Canada to send an orthopedic unit for service in the Scottish emergency hospitals has met with a prompt response. Nine Toronto orthopedists and twenty-two nurses experienced in orthopedic work and chosen from all parts of the dominion have arrived with the latest contingent of Canadian soldiers. They brought some special equipment, the gift of the Canadian Red Cross Society, which, with the Canadian Medical Association, organized the unit. The unit is led by Dr. Le Mesurier of the Toronto Sick Children's Hospital and Miss A. B. Hunter, who was matron at Port Arthur General Hospital. Dr. Andrew Davidson, chief medical officer for Scotland, who welcomed the unit, said that before the war Scotland had inadequate provision for orthopedic surgery; now it had the makings of a first class scheme not only for the present emergency but for the postwar period.

The Vitamin D Added to Margarine to Be Doubled

In the last great war the margarine, which then, as now, largely replaced butter, left much to be desired. It was not vitaminized and had a vile taste. Now the taste is so good that few can distinguish it from butter, which it is claimed to equal in vitamin content. It is announced that the amount of vitamin D added to margarine is to be doubled and that in future an ounce will contain more of the vitamin than an average egg. Vitamin D is specially important for children because of its part in the forming of bones and teeth. The other principal sources of vitamin D are eggs and cod liver oil. Increasing advantage is being taken of the free distribution of the oil. But whether the addition of synthetic vitamins to margarine makes it equal to butter has been questioned by Prof. J. C. Drummond, scientific adviser to the Ministry of Food, as stated in a previous letter. He holds that our knowledge of vitamins is still imperfect, that there may still be factors in our natural foods besides those which are replaced by synthetic vitamins.

Acute Hemorrhagic Pancreatitis as a Cause of Sudden Death

The symptoms of acute pancreatitis are generally compared to those of perforation of the stomach or intestine, but the shock and pain are stated to be even more intense. Yet, while sudden death is recognized as a rare result of perforation, this is unmentioned in the textbook descriptions of acute pancreatitis and does not appear to have been reported in British journals previously. Dr. J. F. Gaskell, physician to Addenbrooke's Hospital, Cambridge, has recorded in the *Clinical Journal for January 10* cases of sudden death due to acute hemorrhagic pancreatitis which have come under his observation since December 1932 in necropsies performed by order of the coroner. The subjects were apparently in normal health within two hours of being found dead, except when death had taken

place in bed at night. The evidence that acute pancreatitis was the cause of the sudden death is the condition of the pancreas, with failure, except in one case, to discover any other possible cause. The pancreas was softer than normal and showed hemorrhages in its substance round the ducts and vessels. Fat necrosis was found microscopically, but the macroscopic evidence was slight, which Dr. Gaskell explains by the fact that the death was too sudden to allow it to develop. How dramatic the cases were in their suddenness is shown by the case of a Cambridge undergraduate aged 22, who went on a hare and hound run almost directly after a heavy meal. He stopped about a mile away and bent forward with his hands on his abdomen. He sat in a hedge and was left by a friend, who thought that he was winded. Others in the run coming up later found him dead. The necropsy showed acute hemorrhagic pancreatitis. The pancreas was swollen and tinged pink throughout and microscopically was entirely necrosed with hemorrhages round the vessels.

Streptococcic Cross Infection in Hospital Wards

Recently the danger of wounds becoming infected in hospital wards has been recognized. At a meeting of the Section of Surgery of the Royal Society of Medicine the president, Mr. E. Rock Carling, said that surgeons had been slow in appreciating the work on cross infection done by physicians in hospitals for infectious diseases but that shortly before the war much work was done in wards and operating rooms in the study of the bacterial content of the air and in attempts to sterilize the air by aerosols or ultraviolet rays. Some of the results were startling. Perhaps it was not surprising that in the course of bronchoscopy bronchial flora should in a few minutes be recovered from a distant part of the operating room, but it was surprising that air hitherto entirely free from *Bacillus pyocyaneus* should be found to contain it within five minutes of opening an abscess in which it was present. After Dunkirk surgical literature became full of more extended investigations, and a group of pathologists put forward a new technic for war dressings (*THE JOURNAL*, Nov. 15, 1941).

Prof. A. A. Miles said that the organism commonly concerned in cross infection in wards, *Streptococcus pyogenes*, was most easily traced. It was not the commonest cross infecting organism but, owing to its pathogenicity, the most important. In the peacetime surgical ward the streptococcus reservoir was mainly in the upper respiratory tract. In war additional reservoirs were wounds infected before admission, and hospital infection was more common. The three main channels of infection—dust, droplets and hands and instruments—demanded separate precautions. They could be divided into those in the technic of wound dressing and those apart from it. An improved "no touch" technic with rigid separation of the duties of the dressing team and special precautions against the carrying of infection from bed to bed had substantially reduced hospital infection.

Prof. J. Paterson Ross described the essentials of good technic as follows: 1. Precautions against contamination by dust: bed making to be completed an hour before dressings began; lids for dishes and buckets; wounds to be exposed for only a minimum time. 2. Precautions against contact infection: fingers never to touch a wound, skin around or dressings next the skin; forceps to be used or gloves worn; hands and instruments to be dry. 3. Methods of sterilization: instruments and accessories for dressing to be sterilized by effective methods; cleaning of baths to be beyond reproach.

Dr. M. van den Ende said that bacteria were carried through the air in droplets or dust particles. Large droplets carrying infective doses had a relatively short range and fell to the ground rapidly. Adequate bed spacing and masking was the most effective method of dealing with them. Dry dust borne organisms were distributed into the air in large numbers during

bed making and floor sweeping and might remain suspended for long periods. They could be reduced by treating floors and bedclothes with dust laying oils.

Sir James Walton said that in this war, in contrast to the last war, there had been little experience with gross infections. Bomb lacerations were operated on as soon as the patients got over the shock. If possible, the wounds were sewn up and a dressing was put on which was not removed for ten days, and then complete healing was found. If the wounds were large they were packed with petrolatum gauze, which was not touched for three or four days. Ever since the last war he had been teaching that dressers should use only forceps and should touch nothing with the hand.

London's Underground Railway as a Refuge

Remarkable figures are given of the part played by London's underground railway system as a place of refuge from air raids. During 1941, sixteen million people were given shelter at seventy-nine underground stations. Eight and a half miles of three tier bunks were installed on platforms and subways. Canteens for the refugees were provided, and 11 tons of food was distributed nightly during the raids. Other war measures were also taken by the Transport Board. Three hundred and eighteen thousand four hundred yards of netting was put on vehicle windows to protect passengers from glass broken by blast. Nine thousand five hundred women workers displaced men on the railway. Two thousand three hundred allotments of 80 acres were cultivated for the growing of food by the railway employees.

RIO DE JANEIRO

(From Our Regular Correspondent)

Jan. 25, 1942.

Medical Advertising Regulated by Law

There is no medical association in Brazil with the significance and functions corresponding to those of the American Medical Association in the United States. There are many local medical societies, and in Rio de Janeiro there is the National Academy of Medicine; but a system of affiliation of the local associations into a central national organization is completely lacking. In a country larger than continental United States and insufficiently provided with means of communication, these local medical societies are completely separated from one another. Thus there is no uniformity of policies, no ideas in common, and in certain cases there is even some antagonism. The lack of a central professional body to establish policies explains the diversity of attitudes of separated groups of physicians, the variable behavior of the practitioners and the diversified ethical codes which they follow. Consequently it is not uncommon for many physicians to indulge in extensive advertising, use academic and professional titles to which they are not entitled, try to deceive patients with promises of cure that cannot be fulfilled, and boast special systems of medicine that in some instances border on quackery.

To remedy this situation, federal legislation has been enacted attempting to regulate medical advertising. This act forbids physicians to advertise (1) the cure of certain diseases for which there is no established treatment, (2) treatments aiming to control or to interrupt pregnancy, (3) the practice of more than two medical specialties, (4) treatments through correspondence and newspapers or over the radio, (5) the practice of a medical specialty not included in the curriculum of medical schools and the reference to methods of diagnosis and of treatments not yet recognized by the medical societies, (6) the practice of nonpaid consultations in private offices, (7) discrediting references to systems of medicine and to therapeutic procedures recognized by the present legislation and (8) testimonials or statements from patients certifying the cure of diseases for which there is no established treatment. The act permits the physician to

advertise his academic and scientific titles or real professional qualifications, the price of his services and a general reference to the resources and appliances he uses, as x-rays, radium or medical electricity. It is also permissible to use the press or the radio to discuss medical and health problems in a general manner, without the character of individual treatment. Another section of the same act is intended to control the exaggerations used in the advertising of "patent medicines" and proprietary drugs. It is forbidden to advertise these drugs in the lay press (1) without the declaration "to be sold only under medical prescription" if this condition has been imposed in the licensing of the drug, (2) with the claim to cure tuberculosis, syphilis, cancer or blennorrhagia, (3) with the support of statements from lay patients that they have been cured, (4) with the claim to control or to interrupt pregnancy, (5) with discrediting references to the climate or to the sanitary conditions of the country and (6) with pictures to exhibit physical deformities or obviously faked illustrations to deceive the public.

Leprosy in Brazil

Leprosy is an important health problem in Brazil, because of the large absolute number of cases and the slightly increasing trend. The earliest reference to the disease in this country is from Sa Menezes in 1696. Saint-Hilaire described cases of leprosy in 1820 in the state of Minas Gerais. Prior to 1920 there was no special organization to combat leprosy in Brazil. In that year Carlos Chagas created the division of leprosy in the Brazilian Public Health Service, and Prof. Eduardo Rabello was put in charge of that division. At that time about 20,000 cases of leprosy were supposed to exist in Brazil. The first work of the new division of leprosy was to establish centers of diagnosis throughout the country. Ten years later the number of lepers was estimated by Rabello and Silva Araujo to be about 30,000. Dr. Ernani Agricola, now in charge of the division of leprosy, estimates that the present number of lepers is at least 45,000, or about 100 per hundred thousand of population. According to the leprologist Muir, in the whole world the bulk of the patients are in Asia and Africa (China 1 million, India 1 million, Africa about half a million). The prevalence of leprosy in Brazil is comparable to that of Russia, which has about 170,000 lepers to 170 million of population. The most recent statistics place the number of lepers in the Americas at below 100,000. The estimated distribution is, however, most irregular, and the figures are repeatedly being revised upward.

There are now sixteen modern leprosariums in Brazil, where 15,173 patients were isolated, Dec. 31, 1941. In the state of São Paulo more than 90 per cent of the contagious cases are isolated in six leprosariums. About 2,500 cases are isolated in the state of Minas Gerais and about 1,000 in the state of Para. There are fifteen preventoriums where nondiseased children of lepers are interned, and many more institutions are in course of organization. Many centers of treatment are in operation, where chaulmoogra oil is used extensively. Since 1938 the technic of infiltration of the lesions, through multiple local injections of chaulmoogra oil, has been increasingly used, with promising better results. The raw chaulmoogra material has been imported from India, and the chemical division of the Oswaldo Cruz Institute refines this material and prepares three different kinds of chaulmoogra derivatives. The Brazilian personnel of the institute has been trained by an American specialist, Dr. Howard Cole. The institute is trying to prepare therapeutic material from Brazilian plants of the genus *Hydnocarpus*. Extensive studies on the biology of the leprosy bacillus have been carried out in the Oswaldo Cruz Institute by Dr. H. C. Souza Araujo, who knows the problem of leprosy from direct observation in about forty countries of the world. The epidemiology of leprosy in Brazil is also now under investigation. About 25 per cent of the cases are of the pure nervous form. The disease is more prevalent in males than in females, and

also more prevalent in colored natives than in white Brazilians. The prevalence is higher in white foreign people and in white foreign born Brazilians than in white native born Brazilians.

Brazilian Council of Ophthalmology

As a result of the decision of the fourth Brazilian Congress of Ophthalmology, held in Rio de Janeiro in July 1941, the Brazilian Council of Ophthalmology has been founded. The chief functions of the council are (1) to promote the development and progress of the specialty in Brazil and to establish standards of fitness to practice ophthalmology, (2) to act as preceptors for prospective students of ophthalmology and (3) to arrange and conduct examinations to test the qualifications of those who practice ophthalmology and desire a certificate to prove that they meet the standards established by the council. The council will be formed by the professors of ophthalmology from the medical schools of Rio de Janeiro, São Paulo, Bahia, Porto Alegre, Recife and Bello Horizonte and the presidents of the Brazilian Association of Ophthalmology and of four other state ophthalmologic associations. There will be a central executive board and a regional board in each one of the twenty states of Brazil. Examinations will be held annually and will include the applicant's professional and ethical record (at least two years of private practice), at least twenty case reports and a written examination. The constitution of the council permits, as an introductory measure, that the certificate be issued, up to June 30, 1942, to the physicians who prove that they have had a private practice of ophthalmology of at least five years, or at least two years of practice if they prove the completion of an internship of ophthalmology of not less than one year, or to the physicians who are at present ophthalmologists of hospitals, of clinics and of federal, state or municipal health organizations.

Marriages

MERVYN SHOOR, Lieutenant (j. g.), Medical Corps, U. S. Navy, to Miss Enid Olivi of San Francisco, at Mare Island, Calif., Oct. 25, 1941.

ANGUS CRAWFORD RANDOLPH, Lynchburg, Va., to Miss Marjorie Armstrong McLernon of San Antonio, Texas, Dec. 20, 1941.

HAWLEY HOWARD SEILER, Paia, Maui, Hawaii, to Mlle. Marie Augusta Schreiber of Paris, France, Oct. 4, 1941.

RALPH SILER MORGAN, Durham, N. C., to Miss Ruth Evelyn Dodd of Asheville in Arden in December 1941.

RICHARD A. FORNEY, Rochester, Minn., to Miss Margaret Magel of Twin Falls, Idaho, Aug. 28, 1941.

IGNATIUS W. MADURA to DR. EDITH EASON, both of Chicago, at North Bend, Neb., Dec. 20, 1941.

CLEMENT W. BYRNES to Miss Nona Jane Moore, both of Dunlap, Iowa, in St. Louis, Dec. 23, 1941.

ANTHONY RALPH MARICANO, Brooklyn, to Miss Marion Elizabeth Hobbs of Macon, Dec. 25, 1941.

PHILIP CARY WHITEHEAD, Chatham, Va., to DR. BETTY GORDON WILLIS of Culpeper, Dec. 25, 1941.

FREDERICK MARTIN GRAHAM to Miss Elizabeth Braasch, both of Rochester, Minn., Nov. 15, 1941.

ARTHUR C. LAWRENCE, Lincoln Park, N. J., to Miss Evelyn H. Abrash of Paterson, Nov. 30, 1941.

EDMOND H. KALMON JR., Albany, Ga., to Miss Marion Binkley at Nashville, Tenn., Dec. 2, 1941.

MASON C. SMITH, Meriden, Miss., to DR. ELVIRA A. CORRALES of Tampa, Fla., Dec. 29, 1941.

ARTHUR F. GRANDINETTI, Davenport, Iowa, to Miss Rose Tomlin of Waterloo, Dec. 29, 1941.

WILLIAM M. KUNTZ, Columbus, Ohio, to Miss Mertes Mudd of Waco, Texas, Dec. 30, 1941.

GEORGE C. MCCALLUM, Portland, Ore., to Miss Ruth Waind of McMinnville, Dec. 27, 1941.

ROBERT HAYTER, Dallas, Ore., to Miss Joan Schuyler of Tacoma, Wash., Dec. 5, 1941.

Deaths

Frank Frazier Hutchins, Indianapolis; Medical College of Indiana, Indianapolis, 1892; member of the Indiana State Medical Association and the National Committee for Mental Hygiene; instructor at the Butler University Medical Department and the Indiana Medical College from 1892 to 1895; assistant professor of psychology and psychiatry at the Central College of Physicians and Surgeons from 1903 to 1905; professor of mental and nervous diseases at the State College of Physicians and Surgeons from 1906 to 1908; professor of mental and nervous diseases at the Indiana University School of Medicine from 1908 to 1937 and since 1937 emeritus professor; served as a lieutenant colonel during World War I; at one time medical director and superintendent of the Marion (Ind.) National Sanatorium; formerly chief of the neuropsychiatric service at the Walter Reed General Hospital in Washington, D. C.; clinical director of neuropsychiatry at the United States Veterans' Bureau from June 1922 to July 1923, and formerly dean of the school of neuropsychiatry; colonel in the medical reserve corps of the United States Army; consultant to the City Hospital, Robert W. Long Hospital and the James Whitcomb Riley Hospital for Children; aged 71; died, February 22, in the Methodist Hospital of cerebral hemorrhage.

Martha Tracy * Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1904; since 1940 assistant director of public health of Philadelphia; was associated with her alma mater since 1907 as associate professor and director of the laboratory of physiologic chemistry from 1907 to 1913, professor of physiologic chemistry from 1913 to 1921, professor of hygiene from 1921 to 1923, professor of preventive medicine from 1923 to 1931, dean from 1917 to 1940 and since 1940 emeritus dean; worked with the research department of experimental pathology at Cornell University Medical College, New York, from 1904 to 1907, and for many years under the Huntington Fund for Cancer Research, New York; formerly a member of the board of health of Philadelphia and director of the Philadelphia health council and tuberculosis committee; fellow of the American College of Physicians and of the College of Physicians of Philadelphia; past president of the American Medical Women's Association; in 1917 was awarded the doctor of public health degree from the University of Pennsylvania, Philadelphia; aged 65; died, March 22, in the Hospital of the Woman's Medical College of pneumonia.

James Addison Price * Memphis, Tenn.; Atlanta (Ga.) College of Physicians and Surgeons, 1912; past president of the Tennessee Tuberculosis Association; formerly vice president of the National Tuberculosis Association; served during World War I; at one time assistant professor of medicine at the University of Tennessee College of Medicine; superintendent of the Irene Byron Sanatorium, Fort Wayne, Ind., from 1919 to 1921; from 1921 to 1941 medical director of the Oakville (Tenn.) Memorial Sanatorium; was on the staffs of the Methodist Hospital, John Gaston Hospital and the Baptist Memorial Hospital, where he died, January 10, of cerebral hemorrhage, aged 54.

Harry Arthur Paskind * Chicago; University of Illinois College of Medicine, Chicago, 1920; associate professor of nervous and mental diseases at Northwestern University Medical School; member of the American Neurological Association, Association for Research in Nervous and Mental Diseases and the Central Neuropsychiatric Association; president of the Chicago Neurological Society, 1940-1941; served during World War I; editor of the psychiatric section of the *Year Book of Neurology, Psychiatry and Endocrinology* from 1934 to 1938; aged 45; attending neurologist, Evanston (Ill.) Hospital, where he died, March 24, of bronchiectasis and cardiac hypertrophy.

Arnold R. Miller, Harrisville, Mich.; Detroit College of Medicine, 1906; member of the Michigan State Medical Society; past president of the Alpena County Medical Society; for many years mayor of Harrisville; member of the board of education; chairman of the Civilian Defense Council and an examiner for the county draft board; at one time acting assistant surgeon in the United States Public Health Service; owner of a hospital bearing his name; aged 59; died, February 22, of injuries received in an automobile accident.

R. Andral Bratton, York, S. C.; Medical College of the State of South Carolina, Charleston, 1884; member of the South Carolina Medical Association; past president of the York County Medical Society; formerly member of the state board

of medical examiners; for many years a member of the board of trustees of the city schools; on the visiting staff of the York County Hospital, Rock Hill; aged 82; died, January 26, of arteriosclerosis.

Harry Louis Pollock * Chicago; College of Physicians and Surgeons of Chicago, 1894; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; head of the department of otolaryngology, American Hospital; on the staff of the Walther Memorial Hospital; aged 67; died, January 24, in Los Angeles.

Alfred Jones Drury * Roselle, N. J.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1923; member of the Medical Society of New Jersey; on the staffs of the Elizabeth General Hospital and St. Elizabeth Hospital, Elizabeth, N. J., and the Rahway (N. J.) Hospital; physician for the public schools; aged 44; died, January 24, of coronary thrombosis.

Nathan Goodfriend * New York; Columbia University College of Physicians and Surgeons, New York, 1902; fellow of the American College of Surgeons; attending ophthalmologist, Bronx Hospital, and secretary of its medical board; assistant surgeon, Manhattan Eye, Ear and Throat Hospital; aged 61; died, January 17, of coronary thrombosis.

Frank Edgar Fee * Cincinnati; Medical College of Ohio, Cincinnati, 1895; professor emeritus of clinical surgery at the University of Cincinnati College of Medicine; fellow of the American College of Surgeons; visiting surgeon, Christ Hospital; consulting surgeon, Cincinnati General Hospital; aged 68; died, January 29, of coronary occlusion.

Ambrose Watts Thrush, Chambersburg, Pa.; Jefferson Medical College of Philadelphia, 1890; member of the Medical Society of the State of Philadelphia; secretary and past president of the Franklin County Medical Society; formerly county coroner; aged 76; on the staff of the Chambersburg Hospital, where he died, January 28, of pneumonia.

W. Kempton Browning, Merchantville, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1897; member of the Medical Society of New Jersey; served as medical inspector in the schools of Camden and Merchantville; aged 67; died, January 22, in the Cooper Hospital, Camden, of coronary occlusion and lobar pneumonia.

Charles Harkness Willits, Miami, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1879; medical director of the Provident Mutual Life Insurance Company in Philadelphia; aged 84; died, January 2, of aortic stenosis and chronic cystitis.

Bertrum Brant McElhany * Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1900; on the consulting staff of St. Elizabeth Hospital; aged 69; died, January 13, in the Youngstown Hospital, Southside Unit, of injuries received when struck by an automobile as he was crossing the street.

Oat Whitney * Adrian, Mich.; Michigan College of Medicine and Surgery, Detroit, 1894; past president and secretary of the Lenawee County Medical Society; on the staff of the Emma L. Bixby Hospital; aged 73; died, January 7, in the Harper Hospital, Detroit, of primary splenic anemia and pyelonephritis.

Frederick Chalfonte Peters, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1911; served during World War I; since 1939 professor and head of the department of ophthalmology at his alma mater; aged 54; died, January 7, in the Hahnemann Hospital of intracranial hemorrhage.

David Arthur Morgan, Memphis, Tenn.; Barnes Medical College, St. Louis, 1905; served during World War I; at one time on the staff of the United States Veterans Hospital, Excelsior Springs, Mo.; aged 58; died, February 23, in the Baptist Memorial Hospital of cerebral hemorrhage.

John Adams Miller, Roscoe, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1887; member of the Medical Society of the State of New York; for many years county coroner; aged 79; died, January 17, in Monticello of chronic myocarditis.

Samuel Mathew McLaughlin, Santa Monica, Calif.; Eclectic Medical Institute, Cincinnati, 1899; served during World War I; aged 68; was shot and killed, January 18, when he was driving past an aircraft plant and the gun of a soldier who was on guard was accidentally discharged.

Gertrude Anna Spriggs, Lomita, Calif.; College of Physicians and Surgeons of San Francisco, 1900; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the California Medical Association; aged 77; died, Dec. 30, 1941.

Daniel Crumlish Handley, Cincinnati; Cincinnati College of Medicine and Surgery, 1897; member of the Ohio State Medical Association; at one time county and deputy coroner; served during World War I; aged 73; died, January 30, in Christ Hospital of uremia.

Charles Joseph Jaquish, Houston, Texas; University of Pennsylvania School of Medicine, Philadelphia, 1920; member of the State Medical Association of Texas and of the American Academy of Ophthalmology and Otolaryngology; aged 50; died, Dec. 24, 1941.

Charles Hayes King, Bucyrus, Ohio; Ohio Medical University, Columbus, 1906; member of the Ohio State Medical Association; past president and secretary of the Crawford County Medical Society; aged 63; died, January 29, of cerebral hemorrhage.

Henry John Niebruegge, St. Louis; St. Louis College of Physicians and Surgeons, 1900; member of the Missouri State Medical Association; on the staff of the Deaconess Evangelical Home and Hospital; aged 68; died, January 13, of heart disease.

Peter Albert Trice, Thomasville, Ala.; Louisville (Ky.) Medical College, 1902; member of the Medical Association of the State of Alabama; aged 67; died, January 14, in the Goldsby King Memorial Hospital, Selma, of cerebral hemorrhage.

George Francis Pierrot Ⓢ Seattle; American Medical College, St. Louis, 1889; St. Louis College of Physicians and Surgeons, 1890; formerly health officer of Wahkiakum County, Wash., and Eldorado County, Nev.; aged 80; died, Dec. 9, 1941.

Watson Fuller Wood, White Church, Kan.; University Medical College of Kansas City, Mo., 1891; member of the Kansas Medical Society; aged 81; died, January 20, in the Bethany Hospital, Kansas City, of cerebral hemorrhage.

Thomas Shaw Webster, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1888; University of Toronto Faculty of Medicine, 1889; one of the founders of the Toronto Western Hospital; aged 84; died, Dec. 30, 1941.

David Herman Fuller, Fall River, Mass.; Jefferson Medical College of Philadelphia, 1904; formerly medical director and superintendent of the Fall River General Hospital; aged 61; died, January 31, in Westboro of meningoencephalitis.

Ernest Lafayette Handley, Pocahtontas, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1920; member of the Arkansas Medical Society; formerly county coroner; aged 48; died, Dec. 9, 1941, in a hospital at Jonesboro.

Henry Albert Pfeifer, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; member of the State Medical Society of Wisconsin; aged 59; died, January 12, in St. Joseph's Hospital of cirrhosis of the liver.

Edward M. Harris, Cushing, Okla.; Chattanooga (Tenn.) Medical College, 1901; member of the Oklahoma State Medical Association; aged 69; died, January 26, in the Oklahoma City General Hospital of diabetes mellitus and thrombosis.

Emerson Meadows Cooper, Rockwood, Mich.; Trinity Medical College, Toronto, Ont., Canada, 1900; member of the Michigan State Medical Society; aged 65; died, January 29, in the University Hospital, Ann Arbor, of uremia.

Lafayette Franklin Shoemaker, Hillsboro, Texas; Medical College of Alabama, Mobile, 1902; member of the State Medical Association of Texas; aged 73; died, Dec. 22, 1941, in a hospital at Temple of cerebral hemorrhage.

Albert Louis Gustetter Ⓢ Tucson, Ariz.; Medical College of Ohio, Cincinnati, 1900; past president of the board of medical examiners; veteran of the Spanish-American and World wars; aged 65; died in January of pneumonia.

Frank Terry Brooks, Palma, Majorca, Spain; Long Island College Hospital, Brooklyn, 1893; aged 73; died, January 12, in the Hospital of the Good Samaritan, Los Angeles, of arteriosclerosis, heart disease and diabetes mellitus.

Walton Wheeler Young, Washington, D. C.; Howard University College of Medicine, Washington, 1921; aged 65; died, January 6, in the Eastern Dispensary and Casualty Hospital of myocarditis and arteriosclerosis.

Lincoln Jay Pierce, Brookfield, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1913; member of the Missouri State Medical Association; aged 56; died, January 22, of mesenteric thrombosis.

Donald John Macdonald, Halifax, N. S., Canada; McGill University Faculty of Medicine, Montreal, Que., 1897; served during World War I; fellow of the American College of Surgeons; aged 69; died, Dec. 19, 1941.

Joseph J. Shafer Ⓢ Louisville, Ky.; Southern Medical College, Atlanta, 1897; member of the American Academy of Ophthalmology and Otolaryngology; aged 70; died, January 4, in St. Anthony's Hospital of pneumonia.

R. J. Clower, Morven, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 68; died, January 12, in the Brooks County Hospital, Quitman, of coronary occlusion and chronic nephritis.

Francis Marion Thurmon, Pearl, Ill.; Barnes Medical College, St. Louis, 1904; member of the Illinois State Medical Society; formerly mayor and member of the school board; aged 69; died, January 14, of uremia.

William W. Long, Sulphur Springs, Texas; Memphis (Tenn.) Hospital Medical College, 1901; member of the State Medical Association of Texas; aged 71; died, January 11, in Dallas of coronary sclerosis.

Andrew Hunter Ⓢ McKeesport, Pa.; Medico-Chirurgical College of Philadelphia, 1891; served during World War I; on the staff of the McKeesport Hospital; aged 72; died, January 23, of hypernephroma.

Frederick Kent Ream, Palm Beach, Fla.; Rush Medical College, Chicago, 1892; also a dentist; aged 72; died, January 18, in the Good Samaritan Hospital, West Palm Beach, of a self-inflicted bullet wound.

John H. O'Dell, Three Rivers, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; on the staff of the Three Rivers Hospital; aged 63; died, January 29, of pneumonia.

Norman Paul Hersam Ⓢ Stoneham, Mass.; Harvard Medical School, Boston, 1912; school physician; aged 57; died, January 15, in the Middlesex County Sanatorium, Waltham, of military tuberculosis.

Sidney Bruce Matthews, Winnfield, La.; Memphis (Tenn.) Hospital Medical College, 1911; aged 68; died, January 18, in a hospital at Shreveport of arteriosclerosis and hypertensive cardiovascular disease.

Moses Lot Haning, Browning, Mo.; St. Louis University School of Medicine, 1903; member of the Missouri State Medical Association; aged 63; died, January 9, in Muskogee, Okla., of coronary occlusion.

Fred V. Watson Ⓢ Los Angeles; Marion-Sims College of Medicine, St. Louis, 1899; on the staff of the Presbyterian Hospital-Olmstead Memorial; aged 65; died, January 6, of cerebral hemorrhage.

Charles Terrel Hughes, Gainesville, Texas; Kentucky School of Medicine, Louisville, 1889; member of the State Medical Association of Texas; aged 81; died, January 15, of cerebral hemorrhage.

Anthony Lothar Fink, Carroll, Iowa; Deutsche Universität, Medizinische Fakultät, Prague, Austria, 1910; on the courtesy staff of St. Anthony Hospital; aged 60; died, January 20, of chronic myocarditis.

Myer Jerome Herschman Ⓢ Washington, D. C.; George Washington University School of Medicine, Washington, 1917; member of the American Urological Association; aged 47; died, Nov. 15, 1941.

George Robert Norman, Tulsa, Okla.; Birmingham Medical College, 1911; member of the Oklahoma State Medical Association; served during World War I; aged 56; died, January 21, of aortitis.

Henry Peronneau Brown, Lynchburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1907; county coroner; aged 58; died, January 29, of shock following an automobile accident.

John B. Legnard, Houston, Texas; Northwestern University Medical School, Chicago, 1902; served during World War I; aged 66; died, January 4, in the Hermann Hospital of coronary occlusion.

Huldah Davis Hurst, Lincoln, Neb.; Lincoln Medical College of Cotner University, 1905; aged 78; died, January 17, in the Medical and Surgical Hospital, San Antonio, Texas, of coronary occlusion.

Harry Fleisher Rentschler, Reading, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 72; died, January 4, of angina pectoris.

William Givin Rhoten, Wooster, Ohio; Medical College of Ohio, Cincinnati, 1900; formerly health officer of Wayne County; aged 67; died in January in Massillon of chronic myocarditis.

Ora Alexander Johnson, Kansas City, Mo.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1897; aged 69; died, January 26, of coronary occlusion and carcinoma of the prostate.

Henry Bernard Hibbe @ Dubuque, Iowa; State University of Iowa College of Medicine, Iowa City, 1922; aged 50; died, January 24, in St. Clare Hospital, Monroe, Wis., of cirrhosis of the liver.

Louis George Cucinotta, Brooklyn; Tulane University of Louisiana School of Medicine, New Orleans, 1931; on the staff of St. John's Hospital; aged 37; died, January 17, of coronary thrombosis.

Mary Elizabeth Burns, Fitchburg, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1910; for many years school physician; aged 59; died, January 27, of coronary thrombosis.

Robert Reid Berry @ Union, S. C.; Medico-Chirurgical College of Philadelphia, 1901; on the staff of the Wallace Thomson Hospital; aged 64; died, January 23, of coronary occlusion.

Harry Jarrett @ Camden, N. J.; Jefferson Medical College of Philadelphia, 1887; aged 75; died, January 29, at his home in Moorestown of injuries received in an automobile accident.

Andrew Sargent, Hopkinsville, Ky.; Louisville Medical College, 1881 and 1883; formerly member of the city council and state legislature; aged 83; died, January 31, of diabetes mellitus.

Albert Franklin Adams, Reno, Nev.; Cooper Medical College, San Francisco, 1904; served during World War I; aged 62; died, January 16, of coronary occlusion and hypertension.

Levi E. Hinshaw, De Ruyter, N. Y.; Dunham Medical College, Chicago, 1902; formerly a lawyer; for many years health officer; aged 77; died, January 21, of pernicious anemia.

Merle S. Boyer, Philadelphia; Medico-Chirurgical College of Philadelphia, 1896; medical director of the National Accident and Health Insurance Company; aged 71; died, Dec. 10, 1941.

George Westveer, Grand Rapids, Mich.; Physio-Medical College of Indiana, Indianapolis, 1898; aged 74; died, January 18, in St. Mary's Hospital of perforating ulcer of the stomach.

Warren Brodie De Jernett, Commerce, Texas; Bellevue Hospital Medical College, New York, 1883; aged 82; died, January 31, in a hospital at Dallas of cerebral hemorrhage.

Alton Bowie Reddick, Sylvania, Ga.; University of Georgia Medical Department, Augusta, 1911; aged 55; died, January 13, in Atlanta following an operation on the lung.

Eliel Grant Myrick, Fairfield, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904; aged 72; died, January 6, of myocardial insufficiency.

Columbus Huffaker, Chrisman, Ill.; University of Louisville (Ky.) Medical Department, 1905; aged 69; died, January 11, in a hospital at Kankakee of chronic myocarditis.

Leo J. Drozniakiewicz, Milwaukee; Milwaukee Medical College, 1907; member of the State Medical Society of Wisconsin; aged 60; January 20, of coronary thrombosis.

Hollie Bascum Wilson, Vicksburg, Miss.; Bellevue Hospital Medical College, New York, 1888; aged 82; died, January 10, of uremia and benign prostatic hypertrophy.

Lee Otis Vickery, Lena, Ill.; Loyola University School of Medicine, Chicago, 1919; member of the Illinois State Medical Society; aged 54; died, January 10, of uremia.

Warford Lash Nixon, Somerville, N. J.; Jefferson Medical College of Philadelphia, 1889; served during World War I; aged 74; died, January 20, of cerebral hemorrhage.

T. N. McMillan, Thomaston, Ala.; Medical College of Alabama, Mobile, 1895; aged 74; died, January 18, in the Baptist Hospital, Selma, of coronary thrombosis.

William F. Decker, Suffern, N. Y.; New York Homeopathic Medical College, New York, 1876; aged 86; died, January 25, in Newburgh of cerebral hemorrhage.

Gilbert Leonard Hagen, Minneapolis; Minneapolis College of Physicians and Surgeons, 1904; aged 83; died, January 27, of cardiac decompensation and hypertension.

James Oscar Hicks @ Victoria, Texas; Kentucky School of Medicine, Louisville, 1906; aged 61; died, Dec. 31, 1941, in the Victoria Hospital of diabetes mellitus.

John A. Pollard, Lynchburg, Va.; University of Louisville (Ky.) Medical Department, 1894; aged 68; died, January 24, of mitral stenosis and coronary thrombosis.

Alfred H. Tickell, Nevada City, Calif.; Southern Medical College, Atlanta, Ga., 1891; member of the California Medical Association; aged 77; died, January 28.

George Mortimer Wetherell, Adrian, Mich.; Niagara University Medical Department, Buffalo, 1886; aged 84; died, January 3, of cerebral hemorrhage.

Benjamin Lawrence Brigham, Tacoma, Wash.; College of Physicians and Surgeons, Baltimore, 1880; aged 83; died, January 30, of cerebral hemorrhage.

William James Houck @ Newark, N. J.; Medico-Chirurgical College of Philadelphia, 1899; aged 75; died, January 27, of cerebral hemorrhage.

Palmer E. Brandon @ Sioux Falls, S. D.; Northwestern University Medical School, Chicago, 1907; aged 64; died, January 21, of coronary thrombosis.

S. D. Smith, Byron, Ga.; College of Physicians and Surgeons, Baltimore, 1882; aged 85; died, January 3, in a hospital at Macon of bronchopneumonia.

Michael Joseph McAvoy, Baltimore; College of Physicians and Surgeons, Baltimore, 1900; aged 69; died, January 27, of cirrhosis of the liver.

Ocie Rush Peek, Hickory, Miss.; Mississippi Medical College, Meridian, 1907; aged 73; died, Dec. 17, 1941, in the Rush's Infirmary, Meridian.

Houston Rather, Dallas, Texas; Kentucky School of Medicine, Louisville, 1893; aged 80; died, January 15, in Los Angeles of arteriosclerosis.

Frank M. Gallagher @ Columbus, Ohio; College of Physicians and Surgeons, Baltimore, 1901; aged 70; died, January 16, of coronary occlusion.

Paul Acberus Phillips, Springfield, S. C.; Bellevue Hospital Medical College, New York, 1891; aged 72; died, January 23, of heart disease.

John Wesley Moorer, Selma, Ala.; McHarry Medical College, Nashville, Tenn., 1899; aged 62; died, January 12, of cardiac decompensation.

Benjamin Hooke Anderson, Andersonburg, Pa.; Medico-Chirurgical College of Philadelphia, 1899; aged 74; died, January 8, of senility.

Henry John Hunter, Ilion, N. Y.; Baltimore University School of Medicine, 1890; aged 73; died, January 2, of cerebral hemorrhage.

Burwell Wilks Gunn, Maplewood, Mo.; Marion Sims College of Medicine, St. Louis, 1892; aged 78; died, January 30, of myocarditis.

Frank Beemer, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1884; aged 79; died, Dec. 12, 1941.

Abram C. Boice, Orange, Calif. (licensed in Indiana in 1897); aged 85; died, Dec. 29, 1941, of chronic myocarditis.

DIED IN MILITARY SERVICE

Benjamin Franklin Norwood @ Medical Director, Captain, U. S. Navy, New York; University of Tennessee College of Medicine, Memphis, 1912; entered the Navy Sept. 24, 1917; surgeon attached to the Naval Medical Supply Depot, Brooklyn; aged 56; died, January 12, of coronary thrombosis.

Adrian Collison Schoedel, Flushing, N. Y.; University and Bellevue Hospital Medical College, New York, 1934; member of the Medical Society of the State of New York; first lieutenant in the medical reserve corps of the United States Army, in the 3d Battalion, 18th Infantry, 1st Division, Fort Devens, Mass.; aged 32; was killed, February 17, in an automobile accident near Acton, Mass.

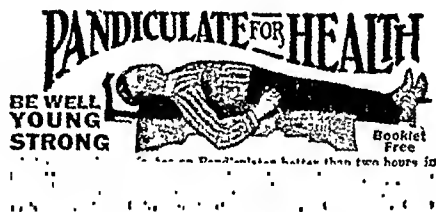
Bureau of Investigation

"MEDIEVAL RACK" STRETCHES THE TRUTH—NOT THE SPINE

U. S. P. O. Department Catches Up with the Pandiculator

So-called spine stretchers, advertised to increase height, "rejuvenate" or perform some other miracle, are so obviously fraudulent that the Post Office Department has banned one after another from the mails for the protection of the public. One of the early ones to suffer this fate—as long ago as 1914—was "The Cartilage Invention," which was promoted from Rochester, N. Y., by some notorious swindlers whose other medical schemes also were scotched by the Post Office. Other similar devices have been exposed in these pages during the intervening years, including one put out by Clara Louisa Glover and "Bernard Bernard" (real name Trapschuh, himself a short person) from Sausalito, Calif. (see *THE JOURNAL*, July 6, 1929, p. 53). Another similar swindle was the "Stebbing System of Height Increase," originally promoted from London, England, but later from the United States, by Mrs. Daisy Stebbing, along with a "Beautipon Treatment" for putting on weight and the "Slim-cream Method" of reducing.

The latest "spine stretcher" to be branded by the Post Office as a fraud is "The Pandiculator," although it thrived for over thirty years. As long ago as 1914, perhaps earlier, it was being advertised in magazines of the health fad type under such



A typical "Pandiculator" advertisement.

claims as "Grow Tall! Get Well! Be Young . . . No More Rheumatism or Sciatica . . . A Cure for Old Age. It will Increase the Length of the Human Body." Further, it was claimed to have "gained the unqualified approval of the foremost physicians of all schools." Perhaps this meant merely the osteopathic school, for the testimonial of Albert Thurlow Hunt, an Omaha osteopath who later moved to Los Angeles, was especially featured. He put out a preposterous device of his own under the high sounding name "Dr. Hunt's New Cervical Spine Relaxer." This was so obviously fakish that the Post Office debarred it from the mails by means of a fraud order, as detailed in *THE JOURNAL*, Dec. 27, 1941, page 2269.

The few doctors of medicine whom The Pandiculator Company of Cleveland cited as users and endorsers of its device were persons of low professional standing such as Albert Abrams and George Starr White, whose own medicomechanical fakes often have been exposed in these columns. The Pandiculator concern brazenly circularized doctors of medicine with such claims as "Progressive leaders of the medical profession have accepted Pandiculation without reservation . . . There is no danger, no experimentation—Pandiculation is no theory. Practice has proved its merits and the medical profession has approved of its use. It is no fad or novelty which will evaporate over night." Nevertheless, the company deemed it expedient to call the device by different names according to the type of practitioner: "The Traction Couch for Physicians," "The Osteotractor for Osteopaths" and "The Chiro-tensor for Chiropractors." Nor were these various practitioners to have exclusive rights in employing it, for it was also played up "for home use by all the family." If there was any difference among these Pandiculators the theory and operation apparently were the same.

The Pandiculator was not cheap, at least in price, for a doctor of medicine who was solicited by form letter to purchase

one was told that it would cost him \$120—but then, the possession of it, he was informed, "opens the door of opportunity for you" and offered "an opportunity to take your place with leading members of your profession." "Inordinately gullible" would be the accurate substitution for "leading."

But Uncle Sam frequently is skeptical about promises that seem a bit too rosy. On May 29, 1941 the Post Office Department served notice on The Pandiculator Company of Cleveland and its officers to show cause on June 18 why a fraud order should not be issued against it. After the defendants had obtained several continuances the company's secretary, H. C. Crowell, and the firm's attorney appeared at the hearing finally held on August 6. At that time the government charged the Pandiculator Company with using the mails to promote its device by means of false and fraudulent pretenses, representations and promises to the effect that when used as directed it would prevent, overcome and cure "every conceivable condition and physical deficiency" including goiter, rheumatism, angina pectoris, pleurisy, asthma, tuberculosis, pneumonia, hay fever, ulcers, diabetes, Bright's disease, rupture, female disorders, locomotor ataxia and other ailments too numerous to catalogue here. All this regardless of the causes of these disorders or the failure of other methods of treatment to produce such results!

The hearing brought out that the Pandiculator Company was not a corporation in spite of its using the names of persons represented as its "officers"; that its sole owner was the person designated as "secretary," Henry C. Crowell, a Cleveland attorney; that Crowell had purchased the business in 1918 from a David B. Cropp and later had sold it to a Harry L. Spaulding, from whom he had bought it back in 1932, and that since then he had operated it for his sole use and benefit. According to his testimony approximately seven thousand Pandiculators had been sold to the public at prices ranging from \$25 to \$125. Some customers had purchased the device after assurance from the promoters that it would cure them of such diseases as tuberculosis, diabetes and arthritis. Some others had reported to the Post Office that the company neither filled their orders nor refunded their money, or, if it did the latter, it was only after complaint had been made to the Post Office.

According to other evidence presented, the Pandiculator sold to home users was a rectangular shaped box covered with fabrikoid. At the ends were T shaped iron posts, one of which was affixed to the box and the other to an adjustable bar which ran in under the box. To use the device a person had to recline on the box and attach his feet to the adjustable post and his head to the fixed post by means of straps which were part of the mechanism. Then, by turning a wheel on the side, which was attached to a cable threaded through a system of pulleys, the adjustable bar was extended and the body stretched.

An eminent orthopedic surgeon of Washington, D. C., who was called as an expert medical witness for the government testified that he had examined the Pandiculator and was familiar with its action and the effect it would have when used as directed; that this would be a stretching of the body but in only one direction, from head to foot; that spinal deformities caused by tuberculosis, syphilis, arthritis, rickets and infantile paralysis must be considered each on a separate and distinct basis in every instance; that although so-called traction therapy is sometimes used by orthopedists in treating certain diseases of the bones and joints, the direction and weight of the pull required in order to obtain beneficial results therefrom can be obtained only after a thorough examination of the patient by a competent practitioner; and that such examination frequently reveals that traction, even when indicated, must be exerted in an angular direction rather than in a straight line, as with the Pandiculator, and must be applied continuously rather than intermittently, as with this device. The witness also exposed the fallacy of some other representations made for the Pandiculator. The opposing witness was a chiropractor and naturopath.

The general worthlessness of the device for increasing height and curing or even benefiting the numerous ailments mentioned in the advertising was so apparent that a fraud order was issued on Dec. 8, 1941 debarring the Pandiculator Company and H. C. Crowell from the mails. Thus passes—it is hoped—a scheme that has swindled the credulous for many years.

NEW NAMES FOR OLD SWINDLES

Collecting Fraud Orders as a Hobby

Certain individuals against whom more than one Post Office Fraud Order has been issued were exposed under the above title in *THE JOURNAL* for March 7, 1942, p 837. Others of a similar ilk are presented herewith.

"Prof" C A Isbell, Fred Mandeville, V L Mandeville and V L Davis—This department of *THE JOURNAL*, Sept 28, 1940, page 1118, dealt with fraud orders that the Post Office Department had issued against seven concerns for conducting medical swindles through the mails. One of these was operated by a "Prof" C A Isbell of Colfax, Calif., who promoted "Isbell's Mineral" for such disorders as cancer, diabetes, pyorrhea, rheumatism, hemorrhoids, stomach ailments and venereal diseases. And what was this alleged panacea? Just a mixture of iron and aluminum sulfates with minute amounts of silica, phosphate, calcium and potassium. Apparently reluctant to relinquish a profitable piece of quickers, Isbell attempted to evade the fraud order by advising his customers and prospects to send no postal money orders but to remit by checks or express money orders addressed to Fred Mandeville at Colfax, Calif (Isbell's home town), or to V L Mandeville or V L Davis at Wenmar, Calif. But the Post Office again caught up with Isbell and on Feb 7, 1941, extended the 1940 fraud order to cover these Mandeville and Davis names.

Tru-Science, Natur-Tabs Company and Wilbur Hanson—In *THE JOURNAL* Dec 28, 1940, page 2298, there was described in detail a case in which the Post Office Department closed the mails on May 28, 1940 to the Natur Food Company and its officers and agents at Kansas City, Mo. The article showed that this fraud order was supplemental to one that the Department had issued on Feb 1, 1940 against the National Diabetic Food Company, George H Keyes and R Randall for conducting a fraudulent mail order scheme in selling "National Diabetic Food" and a supplementary product, "National Mineral Ration" as an alleged "diabetes cure." After the issuance of the first fraud order the Department discovered that the scheme was being conducted under the name Natur Food Company and hence found it necessary to issue an additional order. Further, the article brought out that National Diabetic Food was a pulverized form of the weed saltbush, and its ash contained traces of calcium, iron phosphate, sodium, potassium and chloride. It was further shown that National Mineral Ration was essentially a mixture of minute amounts of epsom salt, calcium, iron, manganese, ammonia, carbonate, bicarbonate, sulfate, chloride and sulfur, with traces of iodides, bromides and possibly of copper, zinc and lithium. The article included the summary of this case by the Department's solicitor, Judge Vincent M. Miles, in which he said, in part, that although the name "Tru Science" also was used by this Kansas City outfit it did not seem necessary to include it in the fraud order against the Natur Food Company. Not long afterward, however, the Post Office discovered that the swindle was still being promoted by George Keyes assisted by Thelma Randall, the daughter of his original partner, and that they were now operating under the names Tru Science, Natur Tabs Company and Wilbur Hanson, North Kansas City, Mo. On May 23, 1941 the Post Office extended the earlier fraud orders to cover these last three names.

The Health Educational Clinic, R L Fraser, The Clinic of Preparedness and Mildred Hagaman—From McCrory, Ark., Robert Lee Fraser, M D operated a mail order business under the high sounding title "The Health Educational Clinic" and sold something with the equally impressive name, "Heavy Vitamins." The Post Office Department charged that he promoted this nostrum under false and fraudulent pretenses, representations and promises to the effect that when used as directed it would cure, overcome, remove the cause of, and prevent the recurrence of cancer, colitis, eczema, athlete's foot, asthma, lumbago, pyorrhea, diabetes, pneumonia, prostate and bladder disorders, tuberculosis, chronic appendicitis, venereal diseases and some other things, regardless of the cause or severity of any of these conditions! And what was this cure all? According to a government chemist who analyzed it, Heavy Vitamins contained 9.952 per cent by weight of sulfuric acid and 0.005 grain per hundred cubic centimeters of mineral matter the remainder being water. The chemist further testified that he found no organic substances in the preparation. Expert medical evidence produced at the hearing showed that a solution having no organic substances could not contain vitamins, hormones or the amino-acids which Fraser claimed were present in Heavy Vitamins, in spite of his testimony that the product contained all the foods necessary to sustain life, including twenty-two amino acids and a food for every gland in the body. Further, it was reported that Fraser's testimony admitted that he had never personally examined any of the patients whose records he submitted to determine whether or not the alleged improvements in their condition were actual but that he had merely accepted their statements as being correct. As his various claims and representations were found to be unsubstantiated by scientific evidence, the Post Office Department issued a fraud order on June 23, 1941 against the Health Educational Clinic, Dr R L Fraser as manager and founder and the officers and agents of his concern. Not long afterward the Post Office discovered that Fraser had resumed his enterprise and was operating not only under his own name and that of the Health Educational Clinic, but also under two new trade styles, the Clinic of Preparedness and Mildred Hagaman, Secretary. As a precaution, however, he was sending his nostrum out through private express companies and explaining in his letters to customers that he could no longer mail Heavy Vitamins but would have to ship the stuff by express "due to 5th Column interference through the post-office department." The second fraud order, issued against the two new trade styles that Fraser was using, was issued Oct 28, 1941.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, March 28, page 1159.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Various centers, June 22-24 *Part III* Various centers, June or July. Exec Sec, Mr Everett S Elwood, 225 S 15th St, Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Oral Groups A and B* Cleveland, Jan 14-15, 1943. Final date for filing application is Dec 7. *Written* Various centers, Nov 16. Final date for filing application is Oct 5. Sec, Dr C Guy Lane, 416 Marlboro St, Boston.

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* St Paul, April, in advance of the meeting of the American College of Physicians and June, Philadelphia, in advance of the meeting of the American Medical Association. Application should be on file 6 weeks in advance of the date of oral examination. *Written* Oct 19. Final date for filing application is Sept 1. Sec, Dr William S Middleton, 1301 University Ave, Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY *Oral* New York, May 12-13. Sec, Dr R Glen Spurling, 404 Brown Bldg, Louisville, Ky.

AMERICAN BOARD OF OPHTHALMOLOGY *Oral* Baltimore, June 6 and Philadelphia, June 8. Sec, Dr John Green, 6830 Waterman Ave, St Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Oral and Written* Chicago, Jan 9-10. Final date for filing application is Nov 1. Sec, Dr Guy A Caldwell, 3503 Prytania St, New Orleans.

AMERICAN BOARD OF PEDIATRICS *Written* Locally, Sept 18. *Oral* Chicago, Nov 23. Final date for filing application is July 1. Sec, Dr C A Aldrich, 707 Fullerton Ave, Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *New York* December. Final date for filing application is Oct 1. Sec, Dr Walter Freeman, 1028 Connecticut Ave N W, Washington, D C.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Contracts: Validity of Contract Restricting Right to Practice Optometry.—The plaintiff operated a number of jewelry stores throughout the state of New York and employed the defendant, a licensed optometrist, in the optical department of one of those stores. The defendant's contract of employment, executed in February 1939, contained two specific covenants. The first provided, in substance, that during his employment, or for one year thereafter, the defendant would not engage in any business that competed with the plaintiff within a radius of 10 miles of any city, town or village in which the plaintiff operated a store. The second restrained the defendant, during the same period of time, from divulging any of the plaintiff's trade secrets or soliciting the patronage of any of the plaintiff's customers. On Jan 11, 1940 the defendant resigned from the plaintiff's employ, rather than be transferred to another town, and on Feb 1, 1940 he opened his own office for the practice of optometry in the town in which he had been employed by the plaintiff. The plaintiff therefore filed a suit in the supreme court, Broome County, N Y, to enjoin the defendant from breaching the aforementioned covenants.

Contracts and agreements of this character, said the supreme court, have been enforced when they are not unduly harsh, unreasonable or inequitable. The court, however, held that the contract in this case was much broader in scope than was necessary to protect the plaintiff's interests. The contract in question assured the defendant neither a definite tenure of employment nor a definite wage. He could have been discharged the next day or his wages could have been substantially reduced. The plaintiff already operated stores in many places in the state and might in the future extend such activities to every sizable community. The result of this would be completely to eliminate the defendant from practicing optometry in the state of New York for one full year. Such a result, concluded the court, was inequitable and would be disastrous to a young professional man. The court further held, however, that the provi-

sions of the second restrictive covenant were fair and should be enforced. It would be most unreasonable, the court said, to allow the defendant to steal the plaintiff's customers through a knowledge of their identity gained by him as an employee. The court therefore held in effect that the defendant could maintain his private office but that he could not build up his practice by taking advantage of the acquaintanceships made during his prior employment by the plaintiff.—*Rudolph Bros., Inc. v. Greulich*, 21 N. Y. S. (2d) 971 (N. Y. 1940).

Poisoning: Lead Poisoning of Infant Attributed to Metallic Breast Shields.—The infant plaintiff was born in a New Jersey hospital on June 6, 1936. His mother obtained and used metallic lead nipple shields. Accompanying the shields was a circular describing the history of their development and stating, in part:

For the prevention and cure of sore nipples these shields should be applied as soon after delivery as possible, and in using them the only attention required is to wipe the nipple previously to nursing and apply the shield again immediately afterwards. They are in no way likely to be injurious to the infant.

The mother said that she used the shields until sometime in January 1937, always being careful thoroughly to wipe each breast with a boric acid solution before feeding the infant. In January the infant became violently ill and was removed to a hospital, where his condition was diagnosed as lead poisoning. In a subsequent suit for damages brought on behalf of the infant against the vendor of the shields, the complaint was dismissed by the supreme court, trial term, Kings County, New York.

The plaintiff argued that lead from the metallic shields was deposited in the fissures of the mother's sore breasts and that the ingestion of this lead by the infant over a period of months caused the infant's illness. The contention was that the nipple shields were not only inherently dangerous but were marketed without proper warning or instructions. The supreme court admitted that a person marketing inherently dangerous products must give fair and adequate warning or instructions to the using public. The evidence showed, however, that many thousands of these shields had been used, both in England and in the United States, for more than ninety years, but that in all that time only once had any member of the medical profession questioned the safety or efficiency of their use. That one occasion was in an article published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, May 15, 1926, in which reference was made to 2 cases. One of those cases, the court said, was hearsay and the other showed that the mother had been negligent in washing her nipples. In fact the article stated:

Lead poisoning in nursing infants is extremely rare . . . One cannot be certain that the nursing infants may not also have sucked lead from the skin or hair of the mothers, or carried it to their mouths on their hands.

. . . we have not found the use of lead nipple shields by nursing mothers previously demonstrated as a source of lead poisoning in infancy.

The article also enumerated other sources of lead poisoning in infants of nursing age as glass nursing bottles containing lead; nursing bottle stoppers, both of metallic lead and of lead-containing rubber and lead frames in which nursing bottles are held; lead powders used by mothers as cosmetics, and inhalation of lead dust, lead paint from a doll and clothing material impregnated with lead. The court added that many persons are allergic to conditions which do not affect the normal individual and that, from the evidence, there was no way of determining whether or not the infant in this case was the subject of a peculiar hypersensitivity to the almost insignificant lead deposits on the mother's breasts.

The plaintiff was required to prove, first, that the injury resulted from lead ingested, even though the mother followed the directions accompanying the shields; second, that the shields were inherently dangerous and poisonous; and, third, that the defendant was negligent in marketing such dangerous and poisonous appliances. The court stated the general principle applicable to the sale of inherently dangerous products: "There must be knowledge of a danger, not merely possible, but probable." The evidence in this case, said the court, showed that

the metallic shields had been used by many thousands of persons and over a long period of time without resultant harm. Neither the manufacturer nor the marketer had any knowledge or indication that the product was in any sense dangerous. Since the defendant knew of no dangers against which the public should have been warned, it was not negligent in putting such product on the market in the manner in which it did. A manufacturer, concluded the court, may not be charged with negligence where some unusual result occurs that cannot reasonably be foreseen and is not within the compass of reasonable probability. The court therefore held that the evidence failed to sustain the allegations of the complaint. Complaint dismissed and judgment for the defendant.—*Clary v. John M. Maris Co.*, 19 N. Y. S. (2d) 38 (N. Y., 1940).

Malpractice: Liability of Hospital for Negligent Acts of Nurse During Operation.—The patient submitted to a cystoscopy in the defendant hospital, a private noncharitable institution. When the physician was ready to perform the operation, he asked a nurse, employed by the defendant hospital and in charge of the operating room, for a 5 per cent solution of cocaine and informed her that there was a 10 per cent solution in the cabinet. The nurse prepared a solution and gave it to the defendant physician, who injected it into the patient's urethra preliminary to passing a catheter. The physician immediately detected an unexpected reaction, and an examination of the bottle from which the solution was taken disclosed that it had contained sodium hydroxide instead of cocaine. Both solutions were colorless and odorless. As a result of the injection of sodium hydroxide, the patient suffered serious burns which developed into strictures. The patient died fifteen months later from other causes, but his executor filed suit in the supreme court, Nassau County, N. Y., against both the physician and the hospital for damages allegedly caused by the injection. The jury returned a verdict in favor of the defendant physician and against the defendant hospital. The trial court, however, granted the hospital's motion to set aside the verdict and dismiss the plaintiff's complaint.

The general competence of the nurse was not questioned; nor were there any suggestions that the hospital had been negligent in either hiring her or retaining her in its employ. The defendant hospital contended, however, that it was not responsible for the negligence of its nurse in the treatment of patients. A hospital, said the court, whether charitable or private, is immune from liability for the negligence of its doctors or nurses with respect to any matter relating to the patient's medical care and attention. In *Schloendorff v. Society of New York Hospital*, 211 N. Y. 125, 105 N. E. 92, the plaintiff sought to recover damages from the defendant hospital because of an unauthorized operation performed by members of the hospital staff. The court held that, in the performance of an operation, the physician was pursuing an independent calling and was not acting as agents of the hospital. The court then added "It is true, I think, of nurses, as of physicians, that, in treating a patient, they are not acting as the servants of the hospital." In the instant case the evidence clearly showed that at the time of her negligence the nurse was assisting the physician in the operating room and attempting to follow his directions and was not acting in the discharge of administrative duties to the hospital. Relying on the *Schloendorff* case, the supreme court said that acts of preparation immediately preceding an operation are necessary to its successful performance and are really part of the operation itself. They are not different in that respect from the administration of the ether, the court continued, and whatever the nurse does in those preliminary stages is done, not as the servant of the hospital, but in the course of the treatment of the patient, as the delegate of the surgeon to whose orders she is subject. Accordingly the motion of the defendant hospital to dismiss the plaintiff's complaint was granted. This judgment was subsequently affirmed by the supreme court, appellate division, second department.—*Striwer v. The Brunswick Home, Inc., et al.*, 13 N. Y. S. (2d) 83 (N. Y., 1939); 20 N. Y. S. (2d) 430 (N. Y., 1940).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, Apr 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.
- American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.
- American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Nashua St., Boston, Secretary.
- American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia. Executive Secretary.
- American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.
- American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.
- American Otolological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Tressner, 101 East 73d St., New York, Secretary.
- American Pediatric Society, Sky Top Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Psychiatric Association, Boston, May 18-22. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.
- American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.
- American Surgical Association, New Orleans, Apr. 6-8. Dr. Charles G. Mixer, 319 Longwood Ave., Boston, Secretary.
- Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.
- Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.
- California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.
- Florida Medical Association, Palm Beach, Apr. 13-15. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia, Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
- Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
- Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Muuns, 112 West Sixth St., Topeka, Executive Secretary.
- Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
- Maryland, Medical and Surgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tiglic, 8 Fenway, Boston, Secretary.
- Medical Library Association, New Orleans, May 7-9. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.
- Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksdale, Secretary.
- Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.
- National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 12-13. Dr. Catleton R. McCall, 5 South State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.
- New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.
- North Carolina Medical Society of the State of, Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.
- Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 22-24. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.
- Pacific Coast Oto Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.
- South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian P. Price, 105 West Chestnut St., Florence, Secretary.

South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107½ Egan Avenue South, Madison, Secretary.

Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Texas, State Medical Association of, Houston, May 11-14. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fourteenth Annual Meeting, Held in Chicago, Nov. 7 and 8, 1941

The President, DR. LAWRENCE D. THOMPSON,
St. Louis, in the Chair

(Continued from page 1162)

Studies in Immunity to Influenza Virus and Hemolytic Streptococcus Infections

DRS. CHARLES A. DOAN, ORAM C. WOOLPERT, CESAR MERINO, JOHN SCHWAB, MARION BEARD and S. SASLAW, Columbus, Ohio: Schwab, Blubaugh and Woolpert in preliminary experiments, employing mice, observed a shorter survival period and a higher mortality rate in animals inoculated intranasally with mixtures of *Streptococcus hemolyticus* group C (Lancefield) and influenza virus A than in those receiving either agent alone. Recently Andrews and Glover have demonstrated conclusively the aerial transmission of a combined streptococci-influenza infection in ferrets.

That more detailed analyses of the humoral and cellular reactions occurring under such conditions might be made, exploratory studies were begun some two years ago on *Macaca mulatta* monkeys. It has been found that an intranasal instillation of 10,000 mouse minimum lethal doses of influenza virus A is followed promptly by the appearance of a striking granulopenic leukopenia and that within eight to twelve days virus neutralizing antibodies may be demonstrated in the blood serum coincident with the reestablishment of the preinfection white cell equilibrium. Fever, anemia, anorexia and positive blood cultures were not observed, and no fatalities occurred in cases of this mild, uncomplicated infection.

Parallel intranasal inoculations of 750,000,000 hemolytic streptococci of group C produced in normal monkeys an immediate characteristic polymorphonuclear leukocytosis, the white cells numbering 30,000 to 50,000 per cubic millimeter, fever, anorexia, gradual weight loss and progressive hemolytic anemia with reticulocytosis. Cultures from the throat remained positive for these organisms for variable periods. The opsonocytaphagic index, precipitin and antistreptolysin titers remained unchanged. The cellular defenses, as reflected in the fluctuating granulocytosis, gradually prevailed, and coincident with the reestablishment of the preinfection equilibrium in the white cells the hemolytic streptococci disappeared from the throat and the temperature became normal. Most significant of all, the anemia, which had been progressive up to this point, was reversed, and a spontaneous return to normal of the red cell and hemoglobin values promptly followed. All normal monkeys under optimum dietary conditions survived this initial infection with hemolytic streptococci.

As might be anticipated, an occasional animal continued to harbor hemolytic streptococci in the throat. In such animals spontaneous clinical exacerbations occurred with the development of albuminuria, hematuria, edema and hypertension, with histologic evidence of renal pathologic conditions post mortem. In recovered monkeys reinoculation with the organism was accomplished three to five months after the original infection. In sharp contrast to the original reactions, no leukocytosis, and little or no fever or other constitutional manifestations of disease developed, but the opsonocytaphagic index rose sharply within twenty-four hours, suggesting a greater individual acquired polymorphonuclear efficiency in dealing with the invaders.

In other experiments the initial influenza virus infection was followed in four days and seventeen days respectively by superimposed hemolytic streptococcus infection. Usually the charac-

teristic polymorphonuclear leukocytosis was observed in monkeys which had received the virus only four days previously, and survival was the rule.

In the others, however, the leukocytosis was completely inhibited, and in 1 animal (monkey 3) death followed within thirty-two days of the original virus infection and on the fifteenth day after the superimposed streptococcus inoculation, with generalized sepsis, as proved by repeated blood cultures and cultures of all organs post mortem.

When hemolytic streptococcus infection was followed by a superimposed virus inoculation at the same two arbitrary time intervals, the virus invasion, after the four day interval, was reflected either by transitory leukopenia (lasting twenty-four hours) or by delayed granulocytopenia (lasting ten to fifteen days) and the neutralizing antibodies were demonstrable as in the uncomplicated influenzal infections. When a seventeen day interval was permitted to elapse, usually all evidence of the streptococcal infection had disappeared and the influenzal reaction occurred with characteristic leukopenia, followed by appearance of neutralizing antibodies in the time relationships already described.

When influenza virus and hemolytic streptococci were instilled simultaneously into the nasal passages of normal monkeys, immediate leukocytosis developed and subsequently leukopenia suggestive of a delayed virus effect.

The relative mildness of the clinical manifestations, associated with the distinctive humoral and cellular reactions, which reflect invasion of mucous membrane by the agents employed, make the normal healthy, well nourished monkey an ideal medium for this type of study. Preliminary investigations with various deficient diets already indicate a materially altered resistance in terms of the factors here analyzed, with a corresponding alteration of clinical morbidity and mortality.

DISCUSSION

DR. M. A. BLANKENHORN, Cincinnati: I should like to ask Dr. Doan whether he has been able by the combination of these things to cause a definite pathologic picture in the lungs. In particular, has he been able to produce the pathologic picture seen in the lungs of patients who died in the epidemic of influenza of 1918 and thereabouts?

DR. C. A. DOAN, Columbus, Ohio: There has been 1 spontaneous death in this particular series. At autopsy the monkey showed pathologic changes in the lung suggestive of those seen in human bronchopneumonia. We have been interested in following the lung fields, both clinically and roentgenographically, in the surviving monkeys, but there has been no evidence significant of gross pathologic changes in the lung. This does not mean that there might not be microscopic histologic changes; that remains to be seen. Because of the scarcity of monkeys we have not yet deliberately killed animals at various stages during the humoral and cellular reactions for tissue studies. Such observations are currently being made. The monkey seems to be more resistant to clinical influenza of type A than the human being and is much more resistant than ferrets and mice. Judging solely from the clinical manifestations, there is no evidence for invasion by the virus at all. It is only by following the peripheral blood cell and blood serologic changes from day to day that one may obtain indirect evidence of invasion. There have been negative reports heretofore, based on clinical data alone, of infection by the influenza virus in monkeys.

The Coagulase Test for Staphylococci

DR. WESLEY W. SPINK and JEAN JERNSTA, B.A., Minneapolis: Several in vitro tests for determining pathogenicity of staphylococci have been developed in the past. The simplest and most satisfactory clinical method is the coagulase test. An intensive study of seventy strains of staphylococci in the past three years reveals that the coagulase positive strains resist the bactericidal action of human blood. This correlation is remarkably constant. Our studies indicate that serious infections and invasion of the blood stream are due to coagulase positive strains with important exceptions that will be discussed. In 2 instances

invasion of the blood stream by coagulase negative Staphylococcus albus strains resulted in death because of the localization of the organisms on the heart valves and the establishment of subacute bacterial endocarditis.

Thermal Effect of Renal Extracts on Guinea Pigs

JOSEPH ZICHIS, PH.D., and DRs. MAURICE WALD, MORRIS E. THOMAS and M. HERBERT BARKER, Chicago: In the preparation and study of renal tissue extracts (Page and his co-workers) a rapid method of assay is urgently needed. When young guinea pigs weighing from 140 to 200 Gm. are inoculated intraperitoneally with 1 to 2 cc. of a clinically active renal extract severe hypothermia results. The hypothermic reaction appears in one to two hours, the greatest temperature fall, of 4 to 10 degrees Fahrenheit, being reached in four to eight hours, and return to normal occurs in twenty-four to thirty-six hours. In addition some of the animals have shown a shocklike reaction. Ten per cent die within twenty-four hours. Inactivated renal extracts, serums and other tissue extracts fail to show this characteristic hypothermic reaction.

In dogs with experimental hypertension, produced by wrapping the kidneys in silk, who present the picture of the malignant stage (blood pressure over 200 mm., detached retinas, listlessness, toxicity and inability to eat or drink), the administration of active extracts greatly improves the general condition. The appetite returns, the dogs move about their cages and the retina shows varying degrees of improvement, with and occasionally without notable falls of the blood pressure.

Patients exhibiting the signs and symptoms of so-called malignant hypertension treated with active renal extracts often show more improvement in their symptoms than fall in the blood pressure. The order of improvement is generally that the headaches disappear, there is a general feeling of well-being, the gallop rhythm of the heart subsides and the retinas clear of hemorrhages, exudate and papilledema. It should be stated that the average fall in systolic blood pressure ranges from 30 to 50 mm. of mercury and the diastolic 15 to 30 mm. Patients with benign or essential hypertension show a more decided fall in blood pressure associated with the disappearance of the headaches, vertigo, dyspnea, constipation and fatigability.

The hypothermic reaction has been correlated with the symptomatic improvement and a decrease in the blood pressure in both experimental animals and patients. Extracts which have produced a sharp drop in temperature in guinea pigs have regularly shown moderate to considerable clinical effect. Extracts which have produced no or slight response of the temperature have shown little or no therapeutic benefit. It is hoped that this or some similar simple test can be found to facilitate the purifying of the hypotensive factor in renal tissue extracts.

Effect on Cardiac Output of Renal Extracts

DRs. ROBERT D. TAYLOR and IRVINE H. PAGE, Indianapolis: Ballistocardiographic observations of the cardiac output were made on 15 hypertensive patients before and after treatment with extracts of kidneys ("angiotonin inhibitor") and on normal human subjects before and after administration of angiotonin, tyramine and methylguanidine sulfate.

When arterial pressure was reduced in hypertensive patients the cardiac output increased roughly 15 to 20 per cent. When extract was withdrawn and the arterial pressure rose the cardiac output decreased to its former level.

Hypertension induced in normal persons by tyramine and methylguanidine was accompanied by highly unpleasant symptoms, whereas that from angiotonin was not. The stroke volume was increased with tyramine, but coincident bradycardia reduced cardiac output. Methylguanidine produced slight bradycardia, reduced stroke volume and cardiac output. Angiotonin, on the other hand, produced little change in pulse rate and considerable reduction in stroke volume and cardiac output.

The results add evidence in favor of the view that the angiotonin-angiotonin inhibitor system plays a part in the genesis of human arterial hypertension.

The Use of Kidney Extract in Controlling Experimental Renal Hypertension and Essential Hypertension

DRS. FRANCIS D. MURPHY, JOHN GRILL, G. P. LANGENFELD, L. J. KURTEN and V. G. GUENTHER, Milwaukee: A kidney extract has been prepared from pork kidneys according to a method described by Page. It has been used to treat 11 patients with essential hypertension and rats with experimental renal hypertension. The results obtained were as follows: Seven of the 11 patients responded satisfactorily, 2 were resistant and 2 were symptomatically improved without a corresponding drop in blood pressure. All the patients had either premalignant or malignant forms of essential hypertension.

The unfavorable features have been the local and the general reactions. The local type, although painful, is not dangerous. There are two kinds of general reactions: the anaphylactic-like type, and the more dangerous kind that is associated with a sharp fall in blood pressure and peripheral vascular collapse.

Rats made hypertensive by Page's method were used for control of the extract before it was injected into patients.

DISCUSSION ON RENAL EXTRACTS

DR. EMMET B. BAY, Chicago: I should like to ask Dr. Taylor how the calculations on cardiac output from ballistocardiographic records are made with special reference to the underlying formula to which Starr has referred, i. e. that $f = m a$, an old-time physical equation. I can see how m in the equation could represent output if it can be separated from a , which represents acceleration. In the presence of a lowered diastolic blood pressure the emptying time of the ventricle might be decreased, and would not this as well as the increased output increase the a of acceleration? Is this taken into account in the calculations? These records probably show improvement in circulatory dynamics, whether or not one can say anything more than that.

DR. GEORGE E. WAKERLIN, Chicago: It is highly desirable to have a shorter method of assaying antipressor extracts than the present one involving the use of dogs, rabbits or rats with renal hypertension. Perhaps the method reported by Dr. Zichis and his co-workers is the one investigators are looking for. This procedure may be similar in principle to the frog method for digitalis. Digitalis assay in the frog, of course, involves the production of a toxic effect, which is essentially an exaggerated therapeutic response, by large doses of the drug. Obviously, more work is necessary before the method proposed can be finally evaluated. The finding of Drs. Taylor and Page that angiotonin decreased the cardiac output in normotensive human beings is most interesting. In view of the well known fact that the cardiac output is within normal limits in essential hypertension, how can the action of angiotonin on the cardiac output in human normotension be adduced as evidence for a pathogenic role for angiotonin in essential hypertension? Did Dr. Murphy and his co-workers control the possible nonspecific effect of the kidney extract in their experiments by treating a group of hypertensive patients with a similarly prepared extract of hog tissue other than the kidney?

DR. HENRY N. HARRIS, Detroit: I was interested in the side effects of one of the extracts mentioned by Dr. Zichis and Dr. Langenfeld, namely the local reactions, shock and death after injections in guinea pigs. Was the peritoneal fluid of the guinea pigs that died increased in amount, and if so was it a protein-like fluid or merely a watery transudate? Some years ago the late Dr. Andrews and I showed that a number of substances, among them bile and bile salts, if injected into the peritoneal cavity in large amounts would cause a local weeping of plasma-like fluid with resultant secondary shock. The shock described by Dr. Zichis might be such a local reaction or it might be caused by the general effects of the fluid after absorption.

DR. FRANCIS D. MURPHY, Milwaukee: As to the cases reported by Dr. Langenfeld, I believe it should be emphasized once more that the patients had had hypertension for a long time before we used the kidney extract; so I do not believe

we were fooled in our interpretation by the old post hoc ergo propter hoc argument. In our cases malignant hypertension failed to respond satisfactorily to treatment, while Dr. Page and his associates have reported favorable results in some of their cases of malignant hypertension. This difference may be explained by the fact that so-called malignant hypertension may occur in some patients who have had long-standing hypertension and well developed renal arteriosclerosis, while in others the malignant syndrome may be engrafted on a fairly normal kidney to begin with. It seems to me that there would be a distinct difference as far as treatment with renal extract is concerned in these two sets of cases. I do not wish to offer these cases as proof that kidney extract is a cure or that it solves the problem of therapeutics in essential hypertension. After using this extract, crude as it is, for about a year, we obtained satisfactory results in about 75 per cent of the cases. When a purer extract is produced a higher percentage of favorable responses is anticipated.

DR. LOUIS N. KATZ, Chicago: The question has been raised whether the ballistocardiograph is a suitable recorder of cardiac output. When Dr. Starr first described this method it did not appear to be sufficiently accurate, but more recent work has convinced me that it can give information of the output of the heart by the methods suggested by Dr. Starr. However, it should not be used for individual cases but rather for a statistical handling of a large series. With regard to the report by Dr. Murphy and his collaborators, I should like to point out that at present the extract of the kidney which has been employed requires large quantities of kidney. It is therefore not practical. Why cannot something be done to improve the manner of extracting so that a better yield can be obtained? Only when this is accomplished will the method have possibilities for widespread clinical use.

DR. PAUL STARR, Chicago: The authors conclude that the extract which lowers the blood pressure is one that benefits the patient. Is it necessarily true that lowering the blood pressure will lengthen the life of the patient?

DR. MORRIS THOMAS, Chicago: In our work with the kidney extract we found considerable symptomatic improvement. In most of the cases there has been a fall in the blood pressure. That is true in cases of malignant hypertension. The indications of improvement have been the disappearance of headaches, improvement in the general feeling of well-being, disappearance of gallop rhythm and clearing of the hemorrhagic exudates previously present in the eyes. There have been no remissions unless the extract was withdrawn. Recently we have been working with benign or simple hypertension, and we have noted in the patients a much greater fall in blood pressure. In 1 with severe essential hypertension the blood pressure was reduced to 145 systolic and 90 diastolic, but with withdrawal of the extract the pressure rose in a few days to 206 to 220 systolic and 120 to 140 diastolic.

DR. IRVINE H. PAGE, Indianapolis: All the kidney extracts which have been employed are crude. The question to be determined is whether there is an active depressor substance in them. With regard to Dr. Starr's question, it has long been thought on the basis of a teleologic explanation that elevation of the blood pressure is a desirable thing. Perhaps it is under certain circumstances, but on the whole the evidence points strongly the other way. We became convinced that the blood pressure could be lowered profoundly without the evidence of peripheral tissue anoxia. On the whole, clinical improvement seemed to follow reduction in blood pressure resulting from surgical operations, thiocyanate therapy or spontaneous reduction. Reduction of the arterial pressure in a hypertensive patient is desirable, not undesirable. It should be stressed especially that renal insufficiency does not occur even when the blood pressure falls sharply. The fear that it will occur appears unjustified. Measurement of the urea clearance following reduction of the blood pressure by a number of means showed beyond doubt that there was no gross over-all reduction in renal efficiency, but the interpretation of the urea clearance is complex;

hence it is necessary to resort to methods which give a more exact picture of the intrarenal hemodynamic changes. The insulin and diodrast clearances, as developed by Smith, Corcoran and Alving, will demonstrate such changes. The pathologic change which seems characteristic of the hypertension of most patients is constriction of the efferent glomerular arterioles with some reduction in total renal blood flow. The interesting fact demonstrated by Corcoran is that kidney extract causes relaxation of the efferent arterioles both in experimentally hypertensive animals and in human beings with hypertension along with a moderate increase in blood flow. As Corcoran and I have emphasized, the actual blood flow through the kidney is the result of two opposing factors: (1) the mean systemic arterial pressure working against (2) the effective resistance of the flow of blood through the kidney; thus if the resistance in the kidney is lowered at the same rate at which the mean arterial pressure is lowered there should be no increase in the renal blood flow. But such a direct proportionality is seldom seen with the administration of kidney extract, with the result that some increase occurs in blood flow along with relaxation of the efferent arterioles and fall in the systemic mean pressure. These observations suggest a certain degree of specificity in the kidney extract; I fully recognize the danger of using the term specificity. There is only scant evidence at present which suggests specificity, but, on the other hand, there is nothing against the notion that has so far been discovered which suggests that these extracts when properly prepared are not specific. The most obvious objection to the results obtained from study of the kidney is that the changes might be due to pyrogenic reactions. Pyrogens have been shown by Smith to cause an intrarenal hemodynamic change somewhat similar to that produced by kidney extract. Actually, thermal reactions have occurred in only a few patients. It seems unlikely that the changes could have been the result of pyrogenic reaction. Dr. Taylor has told you of the effect on the cardiac output. Again, this evidence might be taken to indicate the presence in kidney extract of a substance which is at least unusual in its action. The increase in the cardiac output which follows the reduction in the blood pressure is in some ways just the reverse of what one might anticipate. Perhaps one of the most dramatic effects of kidney extract is that on the eyegrounds. The reversal of the pathologic changes is often complete. Such reversal never occurs in malignant hypertension with the exception of hypertension concomitant with toxemia of pregnancy. I think one could say categorically that, whatever the nature of the kidney extract, its effect, direct or indirect, on the eyegrounds is remarkable. This emphasizes a point which I wish to make, namely that both Dr. Murphy's and our patients have for the most part had far advanced malignant hypertension. We have purposely chosen them because of the clarity with which objective evidences of the disease could be followed and because of the experimental nature of the work. We have not attempted to select patients who might give the best results, nor have we selected the extracts which give the best results. In general, it appears that when the renal function, as measured by diodrast T_m , is below 20 from the therapeutic point of view, giving kidney extract is hardly worth while. One could hardly expect to reverse the morbid process in kidneys so badly damaged, and keeping the patient alive is hardly more than a tour de force. I should like to point out that the preparation of these extracts is a question not so much of the difficult procedures involved as of the impurity of the end product and the poor yield. We are forced to work entirely empirically and up to recent months have had to depend on assay on hypertensive dogs and rats. Recently we have come to employ a test which determines the destruction of angiotonin and which we hope will facilitate assay greatly. Apparently the destruction of angiotonin and the lowering of blood pressure go hand in hand. I have had no personal experience with Dr. Zichis's test. I hope it will prove reliable because it would be an enormous time saver if it did. I do not consider the administration of kidney extract a practical treatment for hypertension at present. Whether it will become practical depends on future research, which is altogether

unpredictable. Whether it proves practical or not it will open another avenue of approach to the difficult problem of hypertension. If the extracts contain substances with therapeutic activity more will be known about them in the course of time. But let me emphasize that if these are merely interesting substances which are found by more exacting testing to have no therapeutic effect then the search for them will have been a lot of fun; it is only when one enjoys one's research that it seems worth doing.

JOSEPH ZICHIS, PH.D., Chicago: I did not ordinarily observe the evidence of fluid concentration. After the guinea pig died all the material seemed to be absorbed, and we have not encountered peritonitis at all.

DR. ROBERT D. TAYLOR, Indianapolis: Dr. Katz helped me a good deal. The formula used was devised by Dr. Starr and published by him. He checked this method with the acetylene and ethyl iodide methods and found it to be within reasonable limits of accuracy in determining cardiac output. As for the decrease in cardiac output produced by angiotonin in normal persons, one must not forget that the experiments were with acute disease and the output cannot be compared with the state seen in chronic hypertension, which, as is well known, is usually normal. In hypertensive patients there is usually cardiac hypertrophy. In our patients we noted that those who had little or no cardiac hypertrophy had a low normal or a subnormal cardiac output, while those whose hearts were hypertrophied had an output in the high normal range. It may well be that the cardiac output in hypertension is maintained at a normal level by adaptive cardiac hypertrophy. In measuring cardiac output with the ballistocardiograph we noted some interesting changes in the tracings themselves. Over the past two years Dr. Isaac Starr has correlated various heart diseases with the tracings produced by the ballistocardiograph. Among the changes he has described is the "early M" complex usually seen in hypertension. This is produced by elevation of the normal H wave and shortening of the normal HI segment. These alterations combined with normal J and K waves produce a capital M. We have noted that angiotonin produces this in normal persons whereas tyramine and methylguanidine sulfate do not, and further that hypertensive patients treated with antipressor renal extracts produce tracings that compare to normal ones. Since both the ballistocardiographic and the renal hemodynamic changes of hypertension are mimicked by the action of angiotonin and, in patients with hypertension, reversed toward the normal by administration of antipressor renal extracts, a pathogenic role of angiotonin in hypertension seems not unlikely, and the specificity of these extracts is further confirmed.

DR. G. P. LANGENFELD, Milwaukee: The only question that has not been discussed is whether other tissue has been extracted or injected as a control. We have not used any other tissue in this way. The only one used has been kidney tissue.

The Localization of Human Bundle Branch Block

DRS. W. C. BUCHBINDER and FRANK NEUWELT, Chicago: The simultaneous registration of the arterial pulse wave (brachial) by the Hamilton manometer and the electrocardiogram was secured on 37 patients having intraventricular block: with a QRS complex of 0.12 second or more. The time difference between the onset of mechanical ejection of the left ventricle and the electrical systole (QE interval) was determined for the 37 and for 20 patients without block who served as controls. The patients with intraventricular block were then separated into functional groups: (1) those having a normal QE interval and (2) those showing an interval prolonged by nearly 50 per cent. Each group shows distinctive electrocardiographic patterns. In the first, QRS₁ was chiefly down or an S wave was present; in the second, QRS₂ was up. The data presented are pertinent to localization of human bundle branch block lesions and are in accordance with the current views localizing the common type in the left bundle system and the uncommon or the one showing an S₁ in the right bundle system.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery 11:181-216 (Dec.) 1941

- X-Ray Therapy: Indications in Everyday Practice. W. D. Anderson, Tuscaloosa.—p. 181.
Management of Esophageal Strictures. G. T. Johnson, Mobile.—p. 186.
Traumatic Rupture of Bladder and Urethra: Surgical Management. J. M. Townsend, Birmingham.—p. 188.
Vitamin Therapy in Relation to Dermatology. R. P. Lester, Mobile.—p. 190.
Pneumothorax in the Home. K. N. Joseph, Birmingham.—p. 197.
Modern Treatment of Sinal Disease. E. R. Nodine, Andalusia.—p. 199.

11:217-260 (Jan.) 1942

- *Thymol Therapy in Tuberculosis: Preliminary Report. H. B. Searcy, R. McBurney, Tuscaloosa, and H. S. Rowe, Mount Vernon.—p. 217.
Pathologic Lesions in Macula and Area Centralis. K. B. Benkwith, Montgomery.—p. 221.
Management of Third Stage of Labor. T. B. Woods, Dothan.—p. 226.
Error and Delay in Diagnosis of Hydronephrosis. E. C. Coats, Florence.—p. 230.

Thymol in Tuberculosis.—Searcy and his co-workers administered 0.3 Gm. of thymol three times a day in the treatment of advanced pulmonary tuberculosis among 6 uncooperative patients. The thymol was given after each regular meal with a glass of whole milk to facilitate absorption. After seven weeks of therapy the patients had improved to such a degree that the daily dose was reduced to 0.3 Gm. given twice a day. During treatment there was no change of environment or of the dietary regimen. After nine weeks of treatment none of the patients had experienced any ill effects from the therapy. The authors realize that their clinical material is meager and that not enough time has elapsed to permit definite conclusions, but they believe that the improvement in their 6 patients is too uniform to be a coincidence. They suggest that the beneficial effect of thymol therapy in fungous disease warrants further study of the use of thymol, thymol combinations and derivatives in the mycobacterial diseases, i. e. tuberculosis and leprosy.

American Journal of Clinical Pathology, Baltimore 11:849-910 (Dec.) 1941

- Behavior of Plasma Prothrombin in Pneumonia. L. M. Tocantins and W. A. Hause, Philadelphia.—p. 849.
Classification of Staphylococci. Emma S. Moss, Gretchen Vitter Squires and Anne C. Pitts, New Orleans.—p. 857.
Primary Carcinoma of Fallopian Tube. J. A. Tuta and W. A. Stuhr, Chicago.—p. 864.
*Basal Metabolic Rate in Low Grade Chronic Illness: Statistical Analysis of 166 Cases. M. H. Stiles, Philadelphia.—p. 871.
Relationship of "True Luschka Duct," Adenomas and Aberrant Liver Tissue in Wall of Human Gallbladder. E. T. Thorsness, Denver.—p. 878.
Urolithiasis Medicamentosa Caused by Sulfadiazine. P. Gross, F. B. Cooper and M. L. Hagan, Pittsburgh.—p. 882.
Apocrine Sweat Gland Carcinoma of Vulva. J. R. McDonald, Rochester, Minn.—p. 890.

Basal Metabolism in Chronic Illness.—Stiles determined the basal metabolic rate of 166 persons with low grade chronic illnesses probably secondary to chronic infection. A low rate was the rule. The mean for the 166 persons was -8 . Of these persons 83 per cent had a rate of 0 or below, and 43 per cent had a rate of -10 or less. Persons with moderately severe and severe symptoms of chronic illness had a significantly lower basal metabolic rate than did those with mild symptoms.

American Journal of Diseases of Children, Chicago 63:1-216 (Jan.) 1942

- Cardiac Signs in Rheumatic Infection in Childhood. Rachel Ash, Philadelphia.—p. 1.
Salmonella Suipestifer Infections in Childhood. D. Gajzágó and O. Göttsche, Budapest, Hungary.—p. 15.
Loneliness in Infants. H. Bakwin, New York.—p. 30.
Meningitis Due to Escherichia Coli: Report of Two Cases with Recovery Following Chemotherapy. Review of Literature and Report of Experimental Studies. G. S. Barrett, C. H. Rammelkamp and J. Worcester, Boston.—p. 41.
*Hypertension and Pyelonephritis of Children. G. C. Kimmel, Rochester, Minn.—p. 60.
Myotonia Congenita (Oppenheim) Accompanied by Congenital Intra-spinal Tumor, Developmental Retardation and Malformation. F. H. Lewey, Philadelphia.—p. 76.
Dermatitis Due to "Antiseptic Oils." J. H. Lapin, New York.—p. 89.
Apparatus for Determination of Vital Capacity of Infants. H. M. Smith, S. McLaughan Jr., Baltimore, and W. C. Davison, Durham, N. C.—p. 92.
The Hyperactive Child. J. A. Russell, Washington, D. C.—p. 94.
Francis Home, M.D.: The Scottish Military Surgeon Who First Discovered Diphtheria. E. E. Hume, Carlisle Barracks, Pa.—p. 140.
Developmental Enamel Defects: Clinical Descriptions and Classification. B. G. Anderson, New Haven, Conn.—p. 154.

Hypertension and Pyelonephritis.—Kimmel reviewed the records of 510 children aged 2 months to 15 years who had pyogenic renal disease. Pathologic processes were demonstrated in 91 by urographic examination, at necropsy or at examination of a removed kidney. The group was further studied to determine in how many elevation of the blood pressure was present. For 33 of the children with unilateral renal lesions nephrectomy was performed, for 35 with unilateral renal lesions nephrectomy was not performed and in 23 the renal lesions were bilateral. Blood pressure was considered normal if it was less than 120 mm. of mercury systolic and 80 mm. diastolic, regardless of age. Of the first group of patients the blood pressure on admission in 1 was 138 systolic and 88 diastolic and four years later was 110 systolic and 60 diastolic; in 1 before operation it was 170 to 210 systolic and 140 to 166 diastolic and seven months after nephrectomy was 104 systolic and 74 diastolic. In 1 of the second group of patients on initial examination it was, respectively, 160 and 118 and 148 and 110 three years after an apparent cure after treatment with a ketogenic diet; in 1 on admission it was 148 and 90 and 120 and 80 two days after a nephrostomy on the left side; in 1 on admission it was 172 and 140 and nine months later after several dilations of the right ureter it dropped to 134 mm. systolic; and in 1 it was 200 and 170 soon after admission, and after a bilateral resection of the splanchnic nerve it dropped to 180 and 130. In 1 patient of the third group the blood pressure was 126 and 94 on admission, and five years later, after resection of the presacral nerve and resistance to methenamine and ammonium chloride, it was 142 and 98; in 1 on admission it was 142 and 104, and five years after a suprapubic cystostomy and a sphincterotomy it was 106 and 72; in 1 on admission it was 230 and 170, and after the patient had been five days in bed it was 160 and 120. The last patient died more than a year after dismissal. The age on admission of the 8 patients with hypertension varied from 7 to 14 years. In 3 of the 8, one atrophic kidney was present. In only 2 of the 8 was the level of urea in the blood elevated. Arteriosclerosis was present in seventeen of the thirty-three pyelonephritic kidneys removed at operation. The view that renal ischemia may elevate the blood pressure in human beings seems to be suggested. Hypertension associated with chronic pyelonephritis in children apparently is not rare.

American Journal of Ophthalmology, Cincinnati 25:1-134 (Jan.) 1942

- Microanatomy of Eye with Slit Lamp Microscope: II. Comparative Anatomy of Ciliary Body, Zonula and Related Structures in Mammalia. M. U. Troncoso, New York.—p. 1.
Aqueous Veins: Preliminary Note. K. W. Ascher, Cincinnati.—p. 31.
Early Diagnosis of Choroidal Melanomas. B. Rones, Washington, D. C.—p. 39.
Familial Incidence of Retinoblastoma with Genealogic Chart. H. F. Falls, Ann Arbor, Mich.—p. 42.
Conjunctivochalasis. W. L. Hughes, Hempstead, N. Y.—p. 48.
Ophthalmia Neonatorum: Etiology in Sixty-Two Consecutive Cases. S. H. McKee, Montreal, Canada.—p. 52.
Sulfathiazole in Treatment of Gonorrheal Eye Disease. C. R. Mullen, Philadelphia.—p. 59.
Clinical Photography, with Special Reference to Photography of Anterior Segment of Eye. D. W. Hogart, New York.—p. 62.

American Journal of Pathology, Ann Arbor, Mich.

18:1-168 (Jan) 1942

- Sclerosing Hemangiomas of Central Nervous System Progressive Tissue Changes in Hemangioblastomas of Brain and in So Called Angioblastic Meningiomas O T Briley and R Foid, Boston—p 1
- Production of Cardiac and Renal Lesions in Rats by Diet Extremely Deficient in Potassium R H Follis Jr, Elsa Orent Keiles and E V McCollum, Baltimore—p 29
- Deposition of Calcium in Hearts and Kidneys of Rats in Relation to Age, Source of Calcium, Exercise and Diet L L Barnes, Ithaca, N Y—p 41
- Pathologic Changes in Nutritional Gastritis in Rats B N Berg, New York—p 49
- Distribution of Intimal Atheromatous Lesions in Arteries of Rabbits on High Cholesterol Diets S L Wilens, New York—p 63
- Pathology of Chastek Paralysis in Foxes Counterpart of Wernicke's Hemorrhagic Polioencephalitis of Man C A Evans W E Carlson and R G Green, Minneapolis—p 79
- Intercapillary Glomerulosclerosis R C Horn Jr and H Smetana, New York—p 93
- Glomerulonephritis in Partially Nephrectomized Rats Relation to Administration of Sulfapyridine P Gross F B Cooper and W A Morningstar, Pittsburgh—p 101
- *Interstitial Myocarditis Following Clinical and Experimental Use of Sulfonamide Drugs A J French and C V Weller, Ann Arbor, Mich—p 109
- *Bronchiogenic Carcinoma in Association with Pulmonary Asbestosis Report of Two Cases H B Holleb and A Angrist Jamaica N Y—p 123
- Secondary Carcinoma in Cirrhosis of Liver J R Lisa, C Solomon and E J Gordon New York—p 137
- Neuroblastoma, Ganglioneuroma and Fibrosarcoma in Stillborn Tetus Edith L Potter and J M Parrish Chicago—p 141
- Icterus of Adult Brain Report of Case Eluid K Rutledge and K T Neuburger, Denver—p 153
- Bilateral Fusiform Aneurysms of Cervical Portion of Internal Carotid Arteries J G Riddler New Orleans—p 159
- Trypan Blue Vital Staining in Studies of Virus Lesions on Chorioallantoic Membranes Jean V Cooke and R J Blattner, St Louis—p 163

Myocarditis Following Chemotherapy.—French and Weller state that, during the last four years, interstitial myocarditis with eosinophilic cellular infiltration was occasionally encountered at necropsy at the University Hospital Study revealed that medication during the terminal illness with one or more of the sulfonamide drugs was the only common factor. Survey of the necropsy material (1,706 patients) for 1937 to 1941 revealed that 283 patients had been given one or more of the drugs during the last few weeks of life. In 126 of these patients significant interstitial myocarditis was present. The age of the patients varied from 1 month to 87 years. The amount of the drug (administered over a few hours to several months before death) which apparently produced significant infiltration varied from 5 Gm to more than 200 Gm. Interstitial myocarditis was not present in any patient who had not received chemotherapy for at least thirty days prior to death. No macroscopic changes attributable to the sulfonamide therapy were observed in the affected hearts. The microscopic features of the lesion included interstitial myocarditis, usually with a paravascular and sometimes also with a diffuse distribution of the cellular infiltrations. Both ventricles and auricles were widely involved. The looser auricular myocardium often exhibited a heavier paravascular infiltration than did the compact ventricular muscle. Some foci were likewise seen in the epicardium. The cellular infiltrations contained large mononuclear cells of clasmotocytic type and numerous cells with granular eosinophilic cytoplasm. Except for the acidophilic cytoplasm, some of the eosinophils resembled plasma cells. Eosinophilic infiltrations were occasionally observed in the liver, lungs and kidneys. In some instances the bone marrow, spleen and lymph nodes showed a relative increase in eosinophils. Similar eosinophilic interstitial myocarditis was produced in mice and rats receiving daily intraperitoneal injections of the sulfonamide drugs. The eosinophilic character of the infiltrations makes idiosyncrasy to the drugs seem likely. The lesions were not irreversible. Nevertheless, it is impossible to evaluate the effect that such a lesion might have on the heart of a person seriously ill from some other pathologic condition. Therefore, during therapy the efficiency of the cardiovascular system should be determined at frequent intervals. The authors stress the need of keeping patients who are receiving these drugs under the closest clinical scrutiny and warn that the amount and the duration of therapy should not exceed the amount and duration consistent with beneficial results.

Bronchiogenic Carcinoma and Pulmonary Asbestosis.—Holleb and Angrist report 2 cases of bronchiogenic carcinoma associated with pulmonary asbestosis. An attempt to demonstrate unusual amounts of silica in the lungs was unsuccessful. 240 mg was present in the lungs of the first patient and 45 mg in those of the second per hundred cubic centimeters of tissue. The silica content in the first patient was only slightly elevated, while that in the other one definitely fell within known nonpathologic limits. Therefore the diagnosis of pulmonary asbestosis must rest on (1) a history of prolonged exposure to the dust (twenty-five years for each patient), (2) the presence of a productive cough in 1 and of cough and severe exertional dyspnea without cardiac disease in the other and (3) evidence of asbestosis: diffuse interstitial pulmonary fibrosis, asbestosis bodies, macrophages and giant cells. Inhaled asbestos fiber undergoes dissolution and phagocytosis and may eventually disappear, but it leaves behind irreparable damage. As both patients were employed for a long time in an occupation in which the exposure to asbestos dust was relatively low it is conceivable that extensive damage could result as a summation effect without an appreciable accumulation of asbestos in the lung.

American Journal of Psychiatry, New York

98:317-474 (Nov) 1941 Partial Index

- The Military Psychiatrist at Work W C Porter, Washington D C—p 317
- *Clinical Differentiation of Senile and Arteriosclerotic Psychoses D Rothschild, Foxborough, Mass—p 324
- *Encephalopathia Alcoholica Evaluation of Vitamin Therapy N Jolliffe and H Wortis New York—p 340
- Incidence and Significance of Alcoholism in History of Criminals M Geneva Gray and M Moore, Boston—p 347
- Brain Metabolism VIII Effects of Electric Shock and Some Newer Drugs S M Wortis, D Shaskan, D Impastato and R Almans New York—p 354
- Insulin Convulsions Method of Prevention J P Frostig, San Francisco, C R Bennett, Camarillo Calif, J Schreiber, Stockton Calif, and G F Thomas, Camarillo Calif—p 369
- Follow Up Results in Insulin Shock Therapy After One to Three Years T D Rivers and E D Bond, Philadelphia—p 382
- Vitamin B₁₂ Requirement During Insulin Shock Therapy W Goldfarb and K M Bowman, New York—p 393
- Treatment of Childhood Schizophrenia by Metrazol Shock Modified by D Erythroidin Frances Cottingham, New York—p 397
- Effect of Convulsive Treatment on Memory Irene Sherman, J Mergener and D Levin, Chicago—p 401
- Electroencephalograms of Manic Depressive Patients Pauline A Davis Boston—p 430
- Mental Disorder in One of a Pair of Identical Twins G E Hobbs London, Ont Canada—p 447
- Psychiatric Observations on Children with Abdominal Pain J P Lambert, Katonah N Y—p 451
- Senile and Arteriosclerotic Psychoses.**—Rothschild differentiates the two psychoses, seen in 60 cases, as follows. Senile psychosis tended to occur at a later age and was apt to last longer than arteriosclerotic psychosis. The course of the former was gradually progressive and of the latter sudden, and the illness was sometimes brief and stormy. Intellectual impairment was generally more pronounced in senile condition. Depressive and hypochondriac symptoms were often observed in arteriosclerotic disease but seldom in senile disorders. Paranoid forms of senile psychosis resembled arteriosclerotic psychosis in that the intellectual functions were usually well preserved, but outspoken and chronic paranoid syndromes were not encountered in arteriosclerotic disease. Headache, dizziness and apoplectic form phenomena were observed in arteriosclerotic patients. Other characteristics were syncope, convulsions, explosive emotional outbursts and clinical indications of cardiac disturbance. Peripheral (radial) sclerosis and hypertension were observed with equal frequency in the two psychoses. Anatomically pure forms of each psychosis occurred less often than mixtures of the two processes, but clinically a mixed psychosis was not nearly as frequent. A diagnosis of senile or arteriosclerotic disease, especially of the latter, is made too often. A toxic or a symptomatic psychosis is a common source of error.
- Alcoholic Encephalopathy.**—Jolliffe and Wortis evaluate results of nutritional and vitamin studies in delirium tremens, the Korsakoff psychosis, Wernicke's syndrome and the various cerebral disorders due to deficiency of nicotinic acid. Dietary insufficiency as observed in chronic alcoholism is stressed. The effect of alcohol by itself has still to be evaluated. Vitamin therapy, to be effective, must be instituted before irreversible

Culture Studies in Chronic Gonorrhea.—Maloney and his collaborators examined cervical secretions of 2,429 women of the prostitute class, of 73 untreated women with clinical evidence of gonorrhea and initially positive cultures and the pooled cervical and/or urethral secretions of 56 women to determine the efficacy of the cultural method for isolating the gonococcus. Most of the 2,429 women had varying degrees of cervicitis which might commonly be considered the result of gonococcal infection. A single culture of the cervical secretion revealed positive results in approximately 21 per cent. For each of the 73 patients at least ten and usually twenty culture plates were

used prior to the patient's release from custody. The cultures of 46 per cent remained positive throughout the study of three or four months; the cultures of the cervical secretion of 42 per cent remained positive for one or more observations and then abruptly or sometimes gradually they became negative and remained so during the remainder of the observation period; 12 per cent had characteristically positive cultures followed by numerous consecutive negative cultures and subsequently by one or more positive cultures occurring sporadically during the observation period. The pooled material of all the 56 patients showed the gonococcus, the cervical secretions of 53 and the urethral secretions of 23. A second cultural study was carried out on the secretions of 604 patients. A comparison of the results indicates that approximately one sixth of the patients whose original cultures were negative had positive cultures when the secretions were reexamined. Originally positive cultures were confirmed by reculture for only three fourths of the patients. The authors conclude that it may be unwise to withhold treatment from women solely on the basis of a negative culture when clinical and epidemiologic evidence of infection exists.

Bismuth Stomatitis and Albuminuria.—Peters states that the true incidence of the association of bismuth nephrosis or albuminuria with severe ulcerative stomatitis cannot be determined from the 6 cases recorded in the files of the Johns Hopkins Hospital. This is due partly to the failure in these cases to classify routinely the mild reactions to bismuth therapy and partly to the fact that when one complication was observed no attention may have been paid to the presence or the absence of the other one. In addition to the 6 patients who were hospitalized because of the severity of their complication, there were 7 with a similar but mild complication who were treated as outpatients. The work of Corson, Decker and Williams indicates that bismuth is mobilized by the administration of ammonium chloride. Peters suggests that it is probable that acidosis from any cause will lead to a mobilization of bismuth from the skeletal, muscular and visceral depots. That this may be possible is indicated by the test performed on 5 of the 6 patients who showed a lowered carbon dioxide combining power during the stomatitis and nephrosis. Bismuth should be administered cautiously to patients susceptible to acidosis, for example to patients with diabetes, previous renal damage, intercurrent infections, impaired food intake or retention and heart disease when ammonium chloride is given for its diuretic action. The acidosis which may result may cause bismuth to be mobilized to the extent of producing toxic phenomena.

Annals of Otol., Rhin. and Laryngology, St. Louis

50:979-1292 (Dec.) 1941. Partial Index

- Leonardo da Vinci's Contribution to Laryngology, Rhinology and Phonetics. C. J. Imperatori, New York.—p. 979.
Choice of Treatment of Cancer in Otolaryngology. T. C. Galloway, Evanston, Ill.—p. 1018.
Functional Pattern of Autonomic Nervous System. D. Higbee, San Diego, Calif.—p. 1047.
Use of Preserved Human Cartilage in Reconstructive Facial Surgery. S. Iglauer, Cincinnati.—p. 1072.
Relation of Geriatrics to Otolaryngology. J. A. Babbitt, Philadelphia.—p. 1079.
Role of Nutrition in Industrial Hygiene. Agnes Fay Morgan, Berkeley, Calif.—p. 1114.
Infections of Masticator Space. C. Hall and F. Morris, Los Angeles.—p. 1123.
Otolaryngology from Immunologic Viewpoint. F. J. Novak Jr., Chicago.—p. 1134.
Further Modifications of Nasal Contact Test for Allergy. W. T. Vaughan and V. J. Derbes, Richmond, Va.—p. 1141.
Post-Traumatic Syndrome of Head Injury. H. A. Brown, San Francisco.—p. 1152.
Prophylaxis and Treatment of Common Cold, with Special Reference to Respiratory Vaccine. C. A. Veasey Jr., Spokane, Wash.—p. 1168.
*Chemotherapy and Serotherapy of Acute Otitis Media. R. N. Ganz, C. Lyons and C. F. Ferguson, Boston.—p. 1185.
Skin Reaction Controlled Low Dosage Method of Treatment with Staphylococcus Toxoid: Its Use in Certain Type of Acute Recurrent Rhinitis: Five Year Clinical Study of 394 Cases. K. E. Townsend, Detroit.—p. 1189.
Experimental and Clinical Study of Common Cold. I. G. Spiesman, Maywood, Ill.—p. 1204.

Chemotherapy and Serotherapy for Otitis Media.

According to Ganz and his associates, the early treatment of acute otitis media with myringotomy and sulfonamide derivatives supplemented with immune serum for patients who were

not clinically convalescent within forty-eight hours prevented "surgical" mastoiditis in 40 patients with hemolytic streptococcus or pneumococcal infections. Experience for more than one year in more patients is necessary for a critical evaluation of the method, but the regimen appears most promising. Chemotherapy was continued, often in reduced doses, for three weeks for all patients.

Archives of Internal Medicine, Chicago

69:1-164 (Jan.) 1942

- Type Specific Antibodies in Blood of Patients with Pneumococcal Pneumonia: Detection, Incidence, Prognostic Significance and Relation to Therapies. J. G. M. Bullowa, P. F. de Gara and S. C. Bukantz, New York.—p. 1.
Effect of Estrogen on Utilization of Vitamin B Complex. J. Ashworth and D. C. Sutton, Chicago.—p. 15.
Orthostatic Circulatory Insufficiency: Its Occurrence in Tabes Dorsalis and Addison's Disease. C. L. Spingarn and W. M. Hitzig, New York.—p. 23.
*Goiter with Associated Myasthenia Gravis: Report of Three Cases of Exophthalmic Goiter and One Case of Adenomatous Goiter with Hyperthyroidism. G. F. Kowallis, S. F. Haines and J. deJ. Pemberton, Rochester, Minn.—p. 41.
*Intravenous Use of Sodium Sulfadiazine in Treatment of Pneumococcal Pneumonia. A. H. Donm, H. F. Flippin, J. G. Reinhold and L. Schwartz, Philadelphia.—p. 51.
Infectious Neuritis: Review of Literature and Presentation of Four Cases. M. J. Fox and R. D. O'Connor, Milwaukee.—p. 58.
*Serum Proteins in Cirrhosis of Liver: I. Relation to Prognosis and to Formation of Ascites. J. Post and A. J. Patek Jr., New York.—p. 67.
Id.: II. Nitrogen Balance Studies on Five Patients. J. Post and A. J. Patek Jr., New York.—p. 83.
Torula Meningitis. W. N. Warvi and R. W. Rawson, Boston.—p. 90.
Absorption of Intracutaneously Injected Solutions of Dextrose and Sodium Chloride: Comparison of Absorption Times for Diabetic and for Non-diabetic Subjects. M. Berg, Chicago.—p. 99.
*Prolonged Survival After Perforation of Infarcted Interventricular Septum in Coronary Arterial Disease. S. E. Moolten, New York.—p. 108.
Primary Portal Phlebosclerosis. N. E. Reich, Brooklyn.—p. 117.
Allergy: Review of Literature of 1941. F. M. Rackemann, Boston.—p. 128.

Goiter and Myasthenia Gravis.—According to Kowallis and his collaborators, subtotal thyroidectomy alleviated the symptoms of 1 of 4 patients with hyperthyroidism and myasthenia gravis of the bulbar type. When the two diseases coexist, either may easily be overlooked. The response to prostigmine of the patient with myasthenia gravis is an important diagnostic aid. Iodine may be administered as an aid in the diagnosis of exophthalmic goiter; however, in their patients its effect was not consistent. Its characteristic effect on exophthalmic goiter might not be obtained when untreated myasthenia gravis coexists. The basal metabolic rate, which is not elevated in the patient with uncomplicated myasthenia gravis, may be informative. Pathologically, both exophthalmic goiter and myasthenia gravis are associated with significant involvement of the thymus. The most favored theory of the origin of muscular weakness in myasthenia gravis suggests faulty transmission of nerve impulses due to a defect at the myoneural junction. When exophthalmic goiter and myasthenia gravis coexist, the goiter may precipitate the myasthenia in a patient with a latent tendency toward its development. Another, but less likely, possibility is that exophthalmic goiter may rarely produce muscular disturbances identical with those of myasthenia gravis. The prognosis for patients with the two diseases is grave, particularly if the myasthenia is of the bulbar type. Thyroidectomy for exophthalmic goiter complicated by myasthenia gravis offers certain difficulties. The patient must be able to dispose of tracheal mucus. In the instance reported by the authors, preoperative treatment with prostigmine resulted in sufficient improvement in muscular strength for them to feel no concern in this regard.

Sodium Sulfadiazine for Pneumococcal Pneumonia.—Donm and his associates gave 25 consecutive patients with pneumococcal pneumonia sodium sulfadiazine intravenously. Of the 25, 4 who represented extremely poor therapeutic risks died. There was no significant difference between the mortality with a dose of 2 Gm. given every twelve hours and that with 3 Gm. The results were comparable to those obtained by oral therapy with sulfadiazine. The administration of sodium sulfadiazine intravenously is to be used not as a routine but only when oral therapy is impracticable or impossible.

Serum Protein in Cirrhosis of Liver.—Post and Patek determined the albumin-globulin ratio of 61 and the nitrogen balance of 5 hospitalized patients with cirrhosis of the liver. Of the 61 patients, 54 had an abnormal albumin globulin ratio on admission. The prognosis as to duration of life became increasingly grave as the level of serum albumin decreased. The level of the serum globulin and the value for total proteins in the serum had no such bearing. Clinical improvement was associated with a rise in the serum albumin level toward normal. In patients who failed to improve there was no sustained rise. The level of serum albumin was significantly lower in patients with ascites than in those without ascites. Diuresis was associated with a rise in serum albumin. The mean value for serum albumin at which diuresis occurred was 3.1 Gm per hundred cubic centimeters. The nitrogen balance studies of the 5 patients revealed that although the patients remained in positive nitrogen balance during periods of high protein feeding there was no correlated rise in the level of the serum albumin. The data indicate that patients with cirrhosis of the liver absorb and retain food protein and that the mechanism for the synthesis of serum albumin is impaired.

Survival After Perforation of Infarcted Septum.—Moolten reports a case of survival for sixteen weeks after perforation of an infarcted interventricular septum in coronary arterial disease. During the twelve weeks after admission to the hospital (four weeks after the perforation) evidence of failure of the right side of the heart increased, despite treatment with digitalis and mercurial diuretics. From this case and a review of the histories of 3 similar ones the author concludes that the interventricular septum as a functional entity is of particular significance as a component of deep muscle tracts common to the two ventricles and as an agency for protecting the right ventricle by preserving the differential in pressure between the two ventricles.

Canadian Medical Association Journal, Montreal

46:1-110 (Jan) 1942

- Nutrition in Pregnancy. J. H. Ebbs, W. A. Scott, F. F. Tisdall, Wm. Fred J. Moyle and Marjorie Bell. Toronto—p. 1.
- *Influence of Improved Prenatal Nutrition on the Infant. J. H. Ebbs, A. Brown, F. F. Tisdall, Wm. Fred J. Moyle and Marjorie Bell. Toronto—p. 6.
- *Surgical Kidney as Etiologic Factor in Hypertension. W. F. Brarisch. Rochester, Minn.—p. 9.
- *Intracranial Use of Sulfadiazine. Experimental Study of Histology and Rate of Absorption. E. F. Hurteau. Montreal—p. 15.
- Closed Plaster Treatment of Recent Myoid Wounds. J. Gerrie. Montreal—p. 18.
- Lower Uterine Segment. Anatomic Changes During Pregnancy and Labor. P. J. Kearns. Montreal—p. 19.
- Bacteriology of Recently Inflicted Wounds with Special Reference to Hemolytic Streptococci and Staphylococci. R. Hare and Reba F. Willis. Toronto—p. 23.
- Method of Vaccine Therapy in Atrophic Arthritis. F. T. Cadham. Winnipeg, Man.—p. 31.
- Character and Coincidence of Retinal Hemorrhages Occurring in Diabetics. F. T. Tooke and J. V. Nicholls. Montreal—p. 35.
- Prenatal Status of Cystoparous. R. M. Towell and C. B. Hickox. Hartford, Conn.—p. 41.
- Cat Bite Wound Infection. A. E. Allen. Fort William, Ont.—p. 48.
- *Acro-dynia. U. J. Gareau. Regina, Sask.—p. 51.
- Review of Medical Boards. R. W. I. Urquhart. Toronto—p. 54.
- Canada's Supply of Army Doctors. W. I. Desmond. Hamilton, Ont.—p. 60.
- Resistance to Insulin. E. Lozinski and I. I. Frohlich. Montreal—p. 62.

Antepartum Nutrition.—According to Ebbs and his associates, the infant mortality in Toronto has been reduced about 40 per cent in twelve years since indigent mothers have had their usual diet supplemented with milk, eggs, oranges, cheese, tomatoes, a wheat germ preparation and viosterol during their pregnancy. The number of premature deliveries, miscarriages and stillbirths has been reduced and the general health of the newborn infants during the first six months of life has been singularly improved. The principles of nutrition are never more important than during pregnancy.

Surgical Kidney as Etiologic Factor in Hypertension.—From a review of the cases of hypertension observed at the Mayo Clinic Brarisch concludes that a unilateral non-nephritic, or "surgical," lesion of the kidney is not a frequent cause of hypertension and that the incidence of such lesions among patients with hypertension who are amenable to operation is

less than 1 per cent. The removal of the unilateral renal lesion will often relieve hypertension. A urogram indicating deformity in the urinary tract does not necessarily mean that the renal lesion is an etiologic factor of the hypertension. Further urologic examination is necessary for an exact interpretation. There is no specific renal lesion in hypertension. The essential factor is apparently an intrarenal vascular imbalance which permits the secretion of pressor substances. The renal lesion in hypertension most often amenable to surgical treatment is chronically unilateral, diffuse, atrophic or postoperative pyelonephritis. The deciding factor in the presence of secondary infection is not the degree of infection but the consequent lesions in the renal parenchyma which cause intrarenal secretion of pressor substances. Hypertension was observed less frequently with renal tuberculosis than as an accompaniment of other forms of surgical kidney. Bilateral renal involvement was not an etiologic factor in hypertension. A follow-up study of 198 patients who were operated on revealed that the blood pressure of 65 became and remained normal for a year or more.

Intracranial Use of Sulfadiazine.—Hurteau observed in 9 cats that the local application to a cerebral wound of several drugs of the sulfonamide group resulted in different rates of absorption. The rate was determined by extraction and chemical analysis. Sulfanilamide was absorbed most rapidly, sulfathiazole second and sulfadiazine third, and sulfapyridine was absorbed the least rapidly. Sulfadiazine when in contact with meninges or cerebral parenchyma caused no neuronal destruction and no glial reaction and only a negligible foreign body reaction in the meninges. Sulfadiazine exercised no untoward effect on the final result of wound healing.

Acro-dynia.—Gareau reports 75 cases of acro-dynia encountered in nine years: 17 from cities, 17 from smaller centers and 41 from farms, 30 were in males and 45 in females. The incidence was highest from December to June. The average age at onset was a little more than 11 months. There was a family history of acro-dynia in four families, one family having had 3 children with the disease and three families having had 2 each. Two families lost a child each from complications. Most parents dated the onset of illness to some antecedent illness. The most frequent complaints were fretfulness, irritability and unhappiness, loss of ability to sit, stand and walk, sore eyes, loss of weight, sleeplessness and rash, while the least frequent complaints were profuse sweating, loss of teeth and fever. Four patients died (1 from bronchopneumonia and endocarditis and 3 from bronchopneumonia), 71 recovered, and of these 3 were not seen after the first examination. Of the remaining 68, 57 had their tonsils and adenoids removed. For the 11 not operated on the average duration of illness was about seven months. Of the 57 operated on 30 recovered rapidly, the average duration of illness being less than three and a half months. The 4 patients who died did so before the advent of modern chemotherapy. Etiologic factors that have been suggested as causes of acro-dynia are a lesion in the diencephalon or mesencephalon similar to encephalitis, vitamin deficiency, smut infected cereals, hypervitaminosis D from sunlight, arsenical poisoning, allergy and infection. The average duration of acro-dynia is about six months. It is suggested that acro-dynia is due to a toxemia caused by infected tonsils and adenoids.

Canadian Public Health Journal, Toronto

32:587-630 (Dec) 1941

- Canada's War Effort for the Health of Her People. J. J. McCann. Renfrew, Ont.—p. 587.
- Study of 345 Family Contacts with Tuberculous Lesions. H. J. Anderson. Fort Qu'Appelle, Sask.—p. 594.
- Value of Annual Report of Medical Officer of Health. J. E. Daves. Hamilton, Ont.—p. 601.
- *Pediculosis—New Treatment. I. P. MacHaffie. Ottawa, Ont.—p. 606.
- High School Medical Inspection in Burlington, Ont. A. H. Speers. Burlington, Ont.—p. 608.
- Fallacy of Calculating Rates of Births and Deaths According to Place of Occurrence. E. Gagnon. Montreal—p. 611.

Pediculosis.—For the cure of pediculosis MacHaffie recommends 15 per cent of lethane (n-butyl-carbitol-thiocyanate) in deodorized purified kerosene. One treatment applied to the head without a towel covering kills nits and lice immediately. The head is not to be shampooed for a few days. The cost per head is not more than 2 or 3 cents.

Connecticut State Medical Journal, Hartford

6:1-78 (Jan.) 1942

- Influence of Food, Drug and Cosmetic Act on Marketing of Drugs. T. G. Klumpp, New York.—p. 3.
 Treatment of Fresh Wounds. R. H. Kennedy, New York.—p. 9.
 *Use of Normal Human Plasma in Armed Forces. L. R. Newhouser and E. L. Lozner, Washington, D. C.—p. 14.
 Supplementary Revenue, Subsidies, Gifts, Donations, Endowments and Other Sources of Financial Support. O. H. Bartine, Bridgeport.—p. 17.
 Tonsillectomy in Selected Peritonsillar Abscess: Case Reports and Commentary. F. Turchik, Bridgeport; N. Canfield, F. N. Sperry, New Haven; P. W. Snelling, E. J. Whalen, Hartford; S. H. Baron, New London, and W. H. Turnley, Stamford.—p. 25.
 Sesquicentennial Celebration. H. Thoms, New Haven.—p. 26.
 Connecticut State Medical Society and Medical Institution of Yale College. H. S. Burr.—p. 28.

Use of Normal Human Plasma.—Newhouser and Lozner state that an enrolment of two hundred thousand donors by the American Red Cross has been raised since the United States declared war on the Axis. The medical profession can aid in the collection of a vast amount of plasma by informing patients who can give blood to do so and by allaying their apprehension of venesection. Unless vasoconstriction, hemoconcentration, venous stasis, decreased blood flow, anoxia of tissue and increased capillary permeability following injuries are promptly interrupted the changes in the tissues will be irreversible and the termination fatal. The prompt administration of an adequate amount of normal human plasma not only will halt but will reverse this sequence of events. Death from hemorrhage is due not to the loss of erythrocytes but to the decrease in the circulating blood volume. Plasma is superior to whole blood, since it promptly corrects the increased viscosity of the blood and restores the circulating blood volume. Plasma, preserved in the liquid, frozen or dried state, has the advantage over blood that it can be administered safely without typing of the donor or of the recipient and without preliminary cross matching. Liquid plasma is safe and is most economical if prepared by a closed aseptic and pyrogen free method and if used before the lapse of nine months of storage at 10 to 20 C. After it has been stored eight to nine months a progressive loss of prothrombin, complement and possibly other labile constituents occurs. Liquid plasma is satisfactory for use in hospitals, but it is not well adapted for use aboard ship, in the field of combat or in bases beyond continental limits, where longer periods of storage may be necessary. For use in the foregoing situations frozen plasma (kept at -15 to -20 C.) is ideal, as all the labile constituents are preserved indefinitely, but it must be thawed to or near body temperature, and this may not always be convenient. The restoration of properly dried plasma to the liquid state takes less than three minutes. The time consuming, complicated and expensive method necessary to prepare dried plasma is offset by the facts that it is stable indefinitely, that it survives extreme changes in temperature and that when properly packaged it is ideal for use in the field and aboard ship. For this reason the armed services have decided to use the dried form. The standard army and navy package contains a bottle of dried plasma (made from 300 cc. of citrated plasma), a bottle (300 cc.) of sterile pyrogen free distilled water and the apparatus necessary for restoration and administration. After the torpedoing of the U. S. S. *Kearny*, dried plasma was flown to and dropped by parachute to the medical officer on board ship.

Florida Medical Association Journal, Jacksonville

28:253-308 (Dec.) 1941

- Conditions Simulating Appendicitis. F. G. Slaughter, Jacksonville.—p. 265.
 Rickettsial Disease in the South. J. O. W. Rash, Miami.—p. 270.
 The Public Health Control of Gonorrhea. L. C. Gonzalez, Jacksonville.—p. 286.
 Three Cases of Cancer in Children Under Three Years of Age. H. E. Palmer, Tallahassee.—p. 289.

28:309-360 (Jan.) 1942

- Use of Vitamins in Surgery. J. R. Chappell, T. Butt and S. L. Zieve, Orlando.—p. 323.
 Modern Methods of Immunization. T. M. Palmer, Jacksonville.—p. 330.
 A Year's "Eye" Service at Florida State Hospital in Retrospect. F. V. Gammage, Chattahoochee.—p. 333.
 Plea for Conservative Treatment of Inevitable and Incomplete Abortion. W. C. Roberts, Panama City.—p. 338.

Georgia Medical Association Journal, Atlanta

30:493-534 (Dec.) 1941

- Xeroderma Pigmentosum: Report of Case. E. Bosworth, Rome.—p. 493.

31:1-40 (Jan.) 1942

- Women in Medicine. Loretta Florence, Athens.—p. 1.
 Sparta Child Health Demonstration: Review of Organization, Plans, Activities and Accomplishments. T. F. Abercrombie, Atlanta.—p. 15.
 Refractory Psoriasis: Report of Attempt to Clear Resistant Lesions by Intramuscular Injection of Vitamin D. J. Krafka Jr., Augusta.—p. 21.

Illinois Medical Journal, Chicago

81:1-80 (Jan.) 1942

- Scarlet Fever. A. L. Hoyle, Chicago.—p. 12.
 Ileocecal Granulomas. F. L. McMillan, Chicago.—p. 15.
 *Tumors Occurring in Region of Pulmonary Apex: Further Observations with Report of Twelve Additional Cases. J. J. Stein, Hines.—p. 21.
 *Five Day Treatment of Syphilis. H. Rattner, Chicago.—p. 29.
 *Paravertebral Alcohol Injection for Relief of Cardiac Pain. S. Perlka, Chicago.—p. 35.
 Rheumatism: Practical Methods of Study and New Phases of Investigation. W. L. Wood, R. Merchant, Lucille Watt and Elizabeth Beling, Chicago.—p. 41.
 Physiologic Problems in Suction Drainage of Gastrointestinal Tract. J. L. Lindquist, Chicago.—p. 49.
 Favorable Prognosis of Coronary Disease. D. Luten, St. Louis.—p. 51.
 Vitamin K in Hypoprothrombinemia. J. E. Karabin, Evanston.—p. 56.
 Relapsing Febrile Nodular Nonsuppurative Panniculitis (Weber-Christian Disease). W. A. Rosenberg and T. M. Cohen, Chicago.—p. 59.
 Acute Perforation of Gastric and Duodenal Ulcer: Study of 200 Consecutive Operated Cases. J. B. O'Donoghue and M. B. Jacobs, Chicago.—p. 62.
 Incidence of Syphilis in Alcoholic Patients: Statistical Study of 760 Consecutive Cases. A. J. McGee, Dwight.—p. 69.
 Diagnosis of Poliomyelitis. B. M. Levin, W. H. Reals, I. P. Bronstein and M. Magree, Chicago.—p. 71.

Tumors in Region of Pulmonary Apex.—Stein reviews 15 cases of so-called tumor of the superior pulmonary sulcus which he reported in 1937 and 1938 and presents 12 new cases. Only 1 of the 15 patients was a Negro, and all were men. The right lung of 10 and the left of 5 was involved. The duration of life from the onset of symptoms was thirteen and four-tenths months. The first symptom was pain in the shoulder and arm on the affected side. Horner's syndrome was present in 13 and costal or vertebral changes in 11. Nine patients were irradiated with no appreciable effect; in 2 an attempt was made to remove the tumor, but because the mediastinum and the brachial plexus were involved this was not possible. Eleven of the twelve new tumors occurred in white men and one in a Negro. The average age on admission was 50.7 years. The right lung of 7 patients and the left lung of 5 was involved. The first symptom in 11 was pain in the shoulder on the affected side; Horner's syndrome was present in 8 and costal or vertebral changes in the apical region in 7. Ten patients were irradiated with no appreciable relief, in 1 irradiation and the injection of alcohol into the involved sympathetic nerves gave some relief and 1 obtained relief from symptomatic therapy only. All the patients have died; the average length of life from the onset of symptoms was twelve and three-tenths months. Although Pancoast in 1932 expressed the belief that he had described a new pathologic and clinical entity, recent evidence shows that any tumor in the pulmonary apex may produce the syndrome that he described. The evidence on which he based his conclusions is inadequate, especially since gross or postmortem evidence was not available, a bronchial origin has not been demonstrated and no anatomic structure has been designated as the superior pulmonary sulcus. Microscopic and postmortem evidence is presented which shows that the majority of the malignant tumors in the thoracic inlet or pulmonary apex are carcinomas of the terminal bronchioles of the lung.

Five Day Treatment of Syphilis.—Rattner reports 170 cases of early syphilis in which the so-called five day therapy was employed. The daily dose amounted to 0.24 Gm. of mapharsen dissolved in 2,000 cc. of a 5 per cent solution of dextrose in triple distilled water. There were 103 men and 67 women; 52 had primary syphilis and 118 presented secondary manifestations. Final clinical evaluation cannot yet be made, because experience is much too recent. Spirochetes disappeared from the lesions usually in one or two days, and all open lesions healed during the seven days of hospitalization.

The spinal fluid of 162 patients was examined and was found normal in each instance. Eighty patients have been observed for five or more months after the completion of treatment. All relapses occurred in the fourth month. Of the first 80 patients 14 had to be dropped from the study, in 28 the blood serologic reactions reverted from positive to negative (usually in the tenth week), in 2 the Kahn reaction is still positive six months after treatment but the Kahn quantitative units are steadily decreasing, in 6 (treated before the serologic reaction of the blood became positive) the reaction is still negative after eight months and in 18 a progressive improvement was demonstrated by Kahn quantitative tests; 3 of the remaining patients have relapsed, 1 has probably relapsed or become reinfectd, 2 have had reinfection and in 6 the results were "unsatisfactory when the patient was last seen" (the blood quantitative titers were vacillating rather than decreasing).

Paravertebral Injection of Alcohol for Cardiac Pain.—Perlow states that 16 of 22 patients with cardiac pain obtained complete or partial relief from pain after a paravertebral injection of alcohol. The method is simple and relatively safe and can be repeated if necessary. The objection that the injection removes the danger signal (pain) of coronary insufficiency is theoretical. The patient soon learns to heed other signals and does not harm himself. The relief of pain not only is symptomatically desirable but actually reduces the work of the heart, as the patient can rest and relax.

Journal of Clin. Endocrinology, Springfield, Ill.

2:1-64 (Jan.) 1942

- Creatinine Excretion in Women: Data Collected in Course of Urinalysis for Female Sex Hormones. O. W. Smith, Brookline, Mass.—p. 1.
Creatine Retention Capacity of Boys in Relation to Androgen Function. D. A. Duckworth, New York.—p. 13.
Effects of Testosterone Propionate and Stilbestrol on Mammary Gland Postpartum. E. M. Jeppson, Salt Lake City; H. Y. Kasabach and A. E. Kanter, Chicago.—p. 16.
Stilbestrol Monomethyl Ether: Report on Its Clinical Use. C. F. Geschickter and Elizabeth W. Byrnes, Baltimore.—p. 19.
*Clinical Experiences with Sublingual Administration of Alpha Estradiol. G. J. Hall, Sacramento, Calif.—p. 26.
*Sexual Infantilism of Hypothyroid Origin. H. Lissner, San Francisco.—p. 29.
*Carotenemia in Myxedema: Explanation of Typical Slightly Icteric Tint. R. F. Escamilla, San Francisco.—p. 33.
Diagnosis of Addison's Disease. J. M. Rogoff, Pittsburgh.—p. 36.
Treatment of Addison's Disease with Interrenalin (Adrenal Cortex Extract). J. M. Rogoff, Pittsburgh.—p. 43.
Effect of Adrenal Cortical Extract, Desoxycorticosterone and Added Potassium on Electrolyte Balance in Normals and in Addison's Disease. J. A. Greene, Ann David and G. W. Johnston, Iowa City.—p. 49.
Preoperative Administration of Desoxycorticosterone Acetate in Prevention of Surgical Shock. F. R. Keating Jr., E. H. Ryncarson and Marschelle H. Power, Rochester, Minn.—p. 53.

Sublingual Administration of Alpha Estradiol.—Hall compared the absorption ratio of alpha estradiol in a solution of propylene glycol-alcohol administered sublingually to that of alpha estradiol benzoate given intramuscularly to 98 women with menopausal symptoms. In 41 patients the variation in vaginal cornification after sublingual therapy was determined over fourteen days. At the end of this time, castrates who had received no previous therapy showed improved vaginal cornification, 15 women in the menopause showed a slight reduction of cornification, 8 had smears showing an improved estrogenic level, 5 who had had a hysterectomy had a slight reduction and 3 were definitely improved. Twenty-four of 41 patients did not maintain the same estrogenic level, 3 maintained the original high level and 14 showed much improvement. The patients who did not maintain the required level of estrogen were given an intramuscular injection of 10,000 rat units of estradiol benzoate followed by a dose of 0.1 cc. of the estradiol solution, given sublingually, five times a day (instead of the usual four) with completely adequate results. Therefore, individualization of the dose is required for effective clinical results with sublingual administration. The data justify the belief that the giving of alpha estradiol in a propylene glycol-alcohol solution sublingually produces the same effects on vaginal cornification as the giving of estradiol benzoate parenterally. Propylene glycol-alcohol solution appeared as effective, milligram for milligram, as did alpha estradiol benzoate given hypodermically.

Sexual Infantilism of Hypothyroid Origin.—Lissner reports a case in which the manifestations suggested adolescent hypothyroidism without typical myxedema. An unmarried woman of 27, who appeared twelve to fifteen years younger and whose secondary sexual characteristics were undeveloped, had had irregular, scanty menstrual periods since the age of 16. She was somewhat below normal height, her bone age was estimated at 14 years, her features were slightly puffed and she had a pulse rate of 58 to 66, a basal metabolic rate of -27, severe anemia, preference for warm weather and easy fatigability. The patient was treated for one year with thyroid. This elevated the basal metabolic rate to normal, diminished the anemia and caused the breasts to develop, the menstrual periods to become regular and the personality to become vivacious. She has married and has experienced intense libido and gratification. The pubic hair remained sparse, and no axillary hair appeared. Diethylstilbestrol (1 mg. daily, given orally) was used later, and this seemed to stimulate the growth of the pubic hair.

Carotenemia in Myxedema.—Escamilla cites 7 consecutive cases of untreated myxedema in which carotenemia coexisted. He suggests that this may be part of the typical clinical picture and may explain the yellowish color of the skin seen so frequently. The carotenemia cleared gradually under treatment with thyroid substance. Carotenemia was observed also in a patient with Simmonds' disease. It is suggested that carotenemia frequently accompanies a low basal metabolic rate. The probable explanation is that the conversion of carotene to vitamin A in the liver is hindered by the depressing effect of the lowered metabolism.

Journal of Clinical Investigation, New York

21:1-120 (Jan.) 1942

- Cardiocirculatory Effects in Man of Neosynephrin (1- α -H)-droxy- β -Methylamino-3-Hydroxy-Ethylbenzene Hydrochloride). A. Keys and A. Violante, Minneapolis.—p. 1.
Cardiocirculatory Effects in Man of Synephrin Tartrate (dl- α -Hydroxy- β -Methylamino-4-Hydroxy-Ethylbenzene Hydrochloride). A. Keys and A. Violante, Minneapolis.—p. 13.
Changes in Blood Pressure and in Renal Blood Flow and Glomerular Filtration Rate of Hypertensive Patients Following Unilateral Nephrectomy. M. Friedman, A. Selzer, H. Krentzmann and J. J. Sampson, with technical assistance of P. Blakeslee, San Francisco.—p. 19.
Radioactive Iodine as Indicator in Thyroid Physiology: IV. Metabolism of Iodine in Graves's Disease. S. Hertz, A. Roberts and W. T. Salter, Boston.—p. 25.
Id.: V. Use of Radioactive Iodine in Differential Diagnosis of Two Types of Graves's Disease. S. Hertz and A. Roberts, Boston.—p. 31.
Role of Adrenal Cortex in Acute Anoxia. R. A. Lewis, G. W. Thorn, G. F. Koepf and S. S. Dorrance, Baltimore.—p. 33.
*Effects of Interrupting and Restoring Circulation to Lower Extremities. D. Dauber, M. Landowicz, L. N. Katz and H. Weinberg, Chicago.—p. 47.
Filtration Rate, Effective Renal Blood Flow, Tubular Excretory Mass and Phenol Red Clearance in Normal Pregnancy. Catherine A. Welsh, I. Wellen and H. C. Taylor Jr., with technical assistance of Anna Rosenthal, New York.—p. 57.
Filtration Rate, Effective Renal Blood Flow, Tubular Excretory Mass and Phenol Red Clearance in Specific Toxemia of Pregnancy. I. Wellen, Catherine A. Welsh and H. C. Taylor Jr., with technical assistance of Anna Rosenthal, New York.—p. 63.
Prevention of Sensory Neuron Degeneration in Pig, with Special Reference to Role of Various Liver Fractions. M. M. Wintrobe, C. Mushatt, J. L. Miller Jr., L. C. Kolb, H. J. Stein and H. Lisco, Baltimore.—p. 71.
Pathologic Variations in Blood and Spinal Fluid Pyruvic Acid. E. Bueding, H. Wollis and M. Stern, with technical assistance of Dorothy Esturonne, New York.—p. 85.
*Significance of Porphyruria in Lead Poisoning. R. Kark and A. P. Meiklejohn, Boston.—p. 91.
Acid-Base Balance of Premature Infants. W. S. Branning, Durham, N. C.—p. 101.
Renal Function in Patients with Addison's Disease and in Patients with Adrenal Insufficiency Secondary to Pituitary Panhypofunction. J. H. Talbot, L. J. Pecora, R. S. Melville and W. V. Consolazio, Boston.—p. 107.

Circulation to Lower Extremities.—Dauber and his associates studied the changes in cardiac acceleration and arterial and venous pressure that occurred during the release of a tourniquet applied to the extremities and during occlusion in 27 normal young adults and in 4 subjects with moderately advanced thromboangiitis obliterans. The observations were made while the subjects were recumbent, after a rest period of fifteen to thirty minutes in a warm quiet and darkened room. Cardiac acceleration followed release of occluding cuffs in the

normal subjects but was absent or reduced in the patients with thromboangiitis obliterans. A fall of the blood pressure in the brachial artery preceded the cardiac acceleration. The fall in blood pressure was caused by the opening of a temporary low resistance pathway for blood through vessels dilated as a result of the previous occlusion. The primary mechanism inducing the cardiac acceleration is a reflex response to the drop in pressure in the central arteries (Marey's law). The cardiac acceleration is not caused by a metabolite accumulating in the constricted extremities. The assumption that the reflex arises from the occluded vessel or from the tissue of the extremity is not satisfactory.

Porphyria in Lead Poisoning—Kark and Meiklejohn attempted to trace the path of the destruction of hemoglobin in 2 cases of lead poisoning by observing the effect of intravenously injected hemoglobin on the production of bilirubin and on the excretion of coproporphyrin and urobilinogen in the urine and feces. The introduction of free hemoglobin was followed by a rapid rise in plasma bilirubin. This resembled the bilirubinemia observed by Gilligan, Altschule and Katerby in normal subjects under the same conditions. It was accompanied by a transient increase in the excretion of urinary urobilinogen. The injection caused no detectable increase in the urinary or fecal excretion of coproporphyrin. An interruption in the path by which hemoglobin is destroyed in the body was not demonstrated. Therefore the porphyria occurring in lead poisoning cannot be explained on this basis. The results lend support to the view that the anemia in lead poisoning is dyshemopoietic rather than hemolytic.

Journal Industrial Hygiene & Toxicology, Baltimore

23:459-496 (Dec) 1941

- Significance of Urinary Mercury I Occupational Mercury Exposure II Mercury Absorption from Mercury Bearing Dental Fillings and Antiseptics E D Storlazzi and H B Elkins Boston—p 459
Phenylmercuric Oleate Skin Irritant Properties C P McCord, S F Meek and T A Neal, Detroit—p 466
Toxicology of Selenium VI Effects of Subacute Exposure to Hydrogen Selenide H C Dudley and J W Miller Bethesda, Md—p 470
Some Pharmacologic Properties of "Tergitol" Penetrants H F Smyth Jr, Jane Seaton and Louise Fischer, Pittsburgh—p 478
Solubility of Carbon Disulfide Vapor in Body Fluids and Tissues R W McKee, Boston—p 484

24:1-20 (Jan) 1942

- Evaluation of Lead Hazard in Decorating Department of Glass Plant Relation of Urinary and Atmospheric Lead Determinations C A Smucker and J B Kistler, Columbus, Ohio—p 1
Metabolism of Mononitroparaffins I Recovery of Nitroethane from Animal Organism W Machle E W Scott and J Treon Cincinnati—p 5
Determination of Formaldehyde in Air E C Barnes and H W Speicher, East Pittsburgh Pa—p 10

Journal of Investigative Dermatology, Baltimore

4:431-524 (Dec) 1941

- Electrolyte Content and Permeability of Erythrocyte in Pemphigus N B Kurnick W F Lever and J H Talbott, Boston—p 431
Donnan Equilibrium and Blister Formation T Cornbleet, Chicago—p 451
Dermatitis from New Synthetic Resin Fabric Finishes L Schwartz—p 459
Practical Application of Some Immunologic Principles to Diagnosis and Treatment of Certain Fungous Infections D S Martin, Durham N C—p 471
Pigment Studies in Skin Grafts on Experimental Animals M L Lewin and S M Peck, New York—p 483
Studies in Eczematous Sensitizations I Comparison Between Sensitizing Capacities of Two Allergens and Between Two Different Strengths of Same Allergen and Effect of Repeating Sensitizing Dose A Rostenberg Jr and Naomi M Kanof, Washington, D C—p 505

Journal of Nervous and Mental Disease, New York

95:1-132 (Jan) 1942

- Abstract Art as Expression of Human Problems P Schilder and Esther Leepa Levine, New York—p 1
Exhibitionism N K Rickles, Seattle—p 11
Pharmacologic Aspects of Shock Therapy H A Hoffman, Washington, D C—p 15
Obsessive Compulsive Neurosis in Children L Berman, Boston—p 26
Intravenous Injection of Solution of Zinc Insulin Crystals Its Effect in Treatment of Mental Diseases P Polatin, H Spontitz and A J Raffaele, New York—p 40
Problems of "Physiologic" Sense Perception M Marquardt, Augusta, Maine—p 46

Journal of Neurophysiology, Springfield, Ill.

5:1-88 (Jan) 1942

- Electric Potential Changes at Isolated Nerve Muscle Junction S W Kuffler, Sydney, Australia—p 18
Responses of Iris to Prolonged Stimulation of Its Parasympathetic Nerve Supply J V Luco and H Salvestrini, Santiago, Chile—p 27
Isolation of Retinal and Optic Ganglion Response in Eye of Dytisc C G Bernhard, Stockholm, Sweden—p 32
Acoustic Area of Monkey (Macaca Mulatta) H W Ades Atlanta Ga and R Felder—p 49
Breakdown of Accommodation—Nerve as Model Sense Organ C O Bernhard R Granit and C R Skoglund, Stockholm Sweden—p 57
Effect of Section of Medial Lemniscus on Proprioceptive Functions in Chimpanzees and Monkeys O Sjoqvist and E A Weinstein New Haven, Conn—p 69
Excitation and Inhibition of Phrenic Motor Neurons R F F New York—p 75

Journal of Nutrition, Philadelphia

23:1-100 (Jan) 1942 Partial Index

- Utilization of Calcium of Carrots by Adults Herta Breiter, Reah Mills, Esther Rutherford Williamina Armstrong and Julia Outhen Urbana, Ill—p 1
Occurrence of Free and Bound Biotin J O Lampen, G P Bickel and W H Peterson, Madison, Wis—p 11
Studies in Nicotinic Acid Metabolism Parts I and II H P Sarr J W Huff and W A Perlzweig, with technical assistance of M Stenhouse and Rachel Forth, Durham, N C—p 23
Pantothenic Acid in Nutrition of Rat L M Henderson J M McIntire, H A Waisman and C A Elvehjem, Madison Wis—p 41
Criteria of Response in Bioassay of Vitamin E K E Mason Nashville, Tenn—p 59
Distribution of Vitamin E in Tissues of Rat K E Mason Nashville, Tenn—p 71

Journal of Pediatrics, St. Louis

20:1-144 (Jan) 1942

- Whooping Cough Parts I to IV N Silverthorne C Cameron and A Brown Toronto, Canada—p 1
Stimulation Dose in Whooping Cough J H Lapin Bronx, N Y—p 18
Infectious Mononucleosis Its Treatment with Scarlet Fever Convalescent Serum H K Berkley, Los Angeles—p 26
*Comparison of Routine Urinalysis, Addis Count and Blood Sedimentation Rate as Criteria of Activity in Acute Glomerulonephritis M I Rubin, M Rapoport and A D Waltz, Philadelphia—p 32
*New Concepts of Gonococcal Vaginitis A Cohn, A Steer and E L Adler New York—p 41
Tuberculin Patch Test Study of Effect of Variations of Normal Procedures J Schwartzman, D Dragutsky and G Rook Brooklyn—p 50
Benzedrine Sulfate (Amphetamine) in Treatment of Obese Children and Adolescents Hilde Bruch and Irene Waters, New York—p 54
Thiamine Content of Various Milks N Kendall, Philadelphia—p 6
*Truncus Arteriosus Communis Persists M Lev and O S Sh Chicago—p 74
Mercury Poisoning from Topical Application of 15 per Cent Amalgamated Mercury Report of Case C I Wilbur Jr, Honolulu Hawaii—p 89
Feeding Behavior of Infant During First Twelve Weeks of Life Self Demand Schedule Narrative by Mother with Discussion by Pediatrician Frances P Simsarian and P A McLendon Washington, D C—p 93
*Incidence of Tuberculosis Among 2,562 High School Students in St. Louis City W B Nevius, East Orange N J—p 104

Urinalysis, Addis Count, Blood Sedimentation Rate—

Rubin and his associates followed the course of an attack of acute glomerulonephritis in 40 patients hospitalized within five days of its onset by means of determination of the blood sedimentation rate and the Addis count and routine urinalysis. The data show that while routine urinalysis usually gave normal results on the thirty-seventh day the Addis count required a close correlation between the number of days required for the twelve hour erythrocyte excretion (Addis count) to drop to the 10 million level (seventy-six days) and the time necessary for the rapid sedimentation rate to become normal (seventy-six days). The data demonstrate the inadequacy of routine urinalysis as a guide to the cessation of active disease. The simplicity of the determination of the blood sedimentation rate makes the test a valuable index of the course of acute glomerulonephritis.

New Concepts of Gonococcal Vaginitis—During the last three years Cohn and his colleagues examined 1,715 persons who had symptoms of gonococcal vaginitis or were contacts of persons with the disease. The cultures and smears of 381 were positive. The culture method was the best for

diagnosis and the pronouncement of cure of gonococcal vaginitis. Sulfathiazole therapy was the treatment of choice. Patients with vaginitis who require hospitalization may be cared for in general wards when the usual isolation technic applied for other slightly communicable diseases is employed. Treated patients may return to schools and institutions when clinical signs have cleared up and the cultures are negative. Cure may be pronounced satisfactory when culture gives a negative result every month for six months. Vaginitis will not spread from one girl to another when the vaginal discharge of an infected child is prevented from reaching the vulva of a non-infected one. Attention should be directed toward contaminated linen, diapers, rectal thermometers, enema tips and the fingers of the parent or attendant. The last mentioned item is probably most frequently the fomes in the transmission of the disease. Toilet seats are not an important factor.

Truncus Arteriosus Communis Persists.—Lev and Saphir observed a girl baby aged 18 days whose heart was the seat of a transposition with truncus arteriosus communis persists. The anatomic features of the case were as follows: 1. Only one large vessel, arising from the right ventricle, emanated from the heart. This trunk gave off the coronary arteries, the systemic vessels and two pulmonary arteries. 2. The mouth of this vessel was guarded by three semilunar cusps. 3. The right and left coronary ostia lay, respectively, in the sinus of Valsalva of the left anterior cusp adjacent to the right anterior cusp and above the commissure between the posterior and right anterior cusps. 4. There was an archlike ridge over the combined mouths of the pulmonary arteries. 5. No vessel emerged from the left ventricle. 6. There was a defect of the ventricular septum. 7. The right auriculoventricular valve had only two leaflets. 8. The foramen ovale was patent. 9. The anatomy of the muscle bundles of the right ventricle was abnormal. The authors present a phylogenetic and embryologic explanation of the anomaly.

Tuberculosis Among High School Students.—Nevius states that the patch testing of 2,562 high school students disclosed 396, or 15 per cent, who reacted positively. Roentgenograms of the 396 students showed that 66 had the primary complex and 6 the reinfection type of the disease. The cost of the testing and of making the necessary roentgenograms was \$634.87, or 25 cents per student.

Journal of Pharmacology & Exper. Therap., Baltimore 74:1-98 (Jan.) 1942. Partial Index

- Effects of Calcium Administered Parenterally to Normal and Parathyroidectomized Dog. P. L. Bedinger, A. B. Kendrick and R. W. Keeton, Chicago.—p. 1.
- Studies on Toxicity of Actinomycin. H. J. Robinson, Rahway, N. J., and S. A. Waksman, New Brunswick, N. J.—p. 25.
- Studies on Fate of Morphine. F. W. Oberst, Lexington, Ky.—p. 37.
- Therapeutic Incompatibility Between Sulfapyridine and Quinine. B. K. Harned and Versa V. Cole, Philadelphia.—p. 42.
- In Vitro Study on Synergistic Action of Sulfamido Compounds and Azochloramide on Various Pathogenic Micro-Organisms. E. Neier, Buffalo.—p. 52.
- Effect of Treatment with Testosterone Propionate on Mercuric Chloride Poisoning in Rats. L. P. Longley, Cleveland.—p. 61.
- Conjugation of Sulfanilamide by Pathologic Tissue in Vitro. A. Gotli, Nashville, Tenn.—p. 71.
- Some Toxicologic and Pharmacologic Properties of Gramicidin, Tyrocidine and Tyrothricin. H. J. Robinson and H. Molitor, Rahway, N. J.—p. 75.
- Experimental Comparison of Several Alkylmercuric Chlorides as "Skin Sterilizing" Agents. M. T. Bush and A. D. Bass, Nashville, Tenn.—p. 95.

Toxicologic and Pharmacologic Properties of Certain Antiseptics.—Robinson and Molitor present data on the acute and cumulative toxicity and pharmacologic properties of gramicidin, tyrocidine and tyrothricin as observed in 1,200 Swiss mice and 210 albino rats after oral, intravenous and intraperitoneal administration. Gramicidin and tyrothricin were more toxic than tyrocidine when injected intravenously and intraperitoneally. The preparations were not toxic on single or repeated administration by mouth. The physical properties of gramicidin and tyrocidine limit their application to infections in which local therapy can be employed; the absence of irritating properties in these agents gives them a definite advantage over other antiseptics and may extend the scope of their application. Although the toxicity of gramicidin and tyrothricin

is greater than that of most agents of the sulfonamide group, their extraordinary bacteriostatic activity affords a large margin of safety. Pharmacologically and toxicologically the compounds have no pronounced specific properties. They do not have a definite specific effect on the respiratory or circulatory systems. Large single doses are usually tolerated without any definite effect, while multiple small doses cause a fall of blood pressure and impair respiration. With lethal doses the respiration stops shortly before the heart does. When these compounds are used clinically, care must be taken if rapid and direct absorption into the blood stream is likely.

Medical Annals of District of Columbia, Washington 10:459-500 (Dec.) 1941

- Practical Points in Diagnosis and Treatment of Epilepsy and Migraine. W. G. Lennox, Boston.—p. 459.
- Problems Arising in Chemotherapy of Pneumonia and Meningitis. H. F. Dowling, Washington.—p. 463.
- Clinical Factors in Male Sterility Based on Study of 100 Cases. N. Belt, Washington.—p. 468.
- Treatment of Fibrositis with Vitamin E. D. W. Ingham, Washington.—p. 470.
- Ocular Emergencies in General Medical Practice. F. D. Costenbader, Washington.—p. 472.

New England Journal of Medicine, Boston 225:963-994 (Dec. 18) 1941

- *Hiatus Esophageal Hernia, with Special Reference to Comparison of Its Symptoms with Those of Angina Pectoris. C. M. Jones, Boston.—p. 963.
- The Doctor of One Hundred and Fifty Years Ago. H. H. Amsden, Concord, N. H.—p. 972.
- Insulin Resistance in Case of Diabetes Mellitus and Chronic Lymphatic Leukemia: Report of Case. J. E. Levi and H. T. Friedman, Baltimore.—p. 975.
- Leukemia: Agranulocytosis. H. Jackson Jr., Boston.—p. 978.

Esophageal Hernia.—Jones reviews symptoms presented by 91 patients with small and 37 with large hiatus hernia. The average age of the patients was 55, and most were overweight. A diagnosis was made of heart disease in 13 and of disease of the biliary tract in 22. Substernal pain was experienced by more than one third of the patients with a small but by only 5 of those with a large hernia. Pain in the shoulder, usually on the left, was noticed by about one fourth of all the patients. The pain of 8 of the patients with a small and of 4 with a large hernia radiated to the arm, and pain in the hand and fingers was complained of by 5 of the 8. Palpitation was noted by 6 patients with a small and by 4 with a large hernia. Dyspnea was noticed, respectively, by one tenth and by one third of the patients. Epigastric pain occurred in two thirds of 78 hospital patients and in 19 of 45 private patients. Pain in the costal margin on the right and/or the left side was present in 21 of the 91 patients and in 11 of the 37. About one fourth of the patients complained of pain in the back, and 4 patients with small hernias experienced pain directly under the left or the right scapula. Two of the latter had disease of the gallbladder. Axillary pain was noticed by 3 patients with a small hernia and difficulty in swallowing by 4. Heartburn was a characteristic symptom of small hernia in 14 private patients but in only 2 ward patients. Pain in the right side of the chest, shoulder or arm was observed by 13 patients with a small and by 6 with a large hernia. Eight of 25 patients with substernal pain, 4 of those with pain radiating to the shoulder and 3 of those with pain radiating to the arm stated that exertion frequently initiated the symptom. Nervous tension and acute emotional disturbances initiated symptoms suggesting angina pectoris. The intake of food was responsible for initiating substernal pain in 15 of 25 patients and in half of the patients complaining of pain radiating to the shoulder, arm or fingers. Only 11 patients had heart disease that may have contributed to the presenting symptoms. Study suggests that the pain in hiatus hernia is probably mediated over visceral afferent fibers supplying the esophagus and the cardiac or fundic portion of the stomach, or over the sensory afferent fibers from the diaphragm contained in the phrenic or middle or lower thoracic nerves. Overdistention of the esophagus or the herniated portion of the stomach may thus be responsible for anginal pain in any or all of its components. Treatment is essentially medical. Phrenicectomy or surgical repair is justified only for large hernias or when

medical measures fail. Acute symptoms are frequently helped by administration of glyceryl trinitrate. Assuming an upright or a semiupright position after eating is desirable. Adequate physical and emotional rest, sedation when needed and the avoidance of exercise shortly after the intake of food are valuable measures. Accompanying coronary disease and cholelithiasis should be properly evaluated.

Rhode Island Medical Journal, Providence

24:217-232 (Dec.) 1941

- Henry Turner of Newport: Belated Tribute to Pioneer in Field of Cerebral Decompression. W. Pickles, Providence.—p. 217.
Torula Meningoencephalitis: Report of Case. I. C. Nichols, Wickford.—p. 221.
Ovarian Pregnancy: Case Report. P. S. Geller, Newport.—p. 223.
Needs of the Cardiac Child. H. E. Utter, Providence.—p. 225.

Southwestern Medicine, El Paso, Texas

25:381-414 (Dec.) 1941

- Respiratory Tract Obstruction and Its Secondary Effects. T. C. Gallo-way, Evanston, Ill.—p. 381.
Recent Advances in Cancer. E. P. Palmer, Phoenix, Ariz.—p. 385.
Management of Chronic Arthritis. R. M. Smith, Dallas, Texas.—p. 393.
Cutaneous Complications in Treatment of Syphilis. H. D. Newton, San Diego, Calif.—p. 395.
Effect of Electromagnetic Radiations on Flocculation Tests for Syphilis. E. L. Breazeale, Tucson, Ariz.—p. 398.

Surgery, St. Louis

11:1-168 (Jan.) 1942

- Effect of Bile Salts on Recovery of Liver Function After Release of Common Duct Obstruction. A. L. Berman, E. Snapp and A. C. Ivy, Chicago.—p. 1.
Blood Studies During Anesthesia: Reference to Infections and Non-infections. J. D. Martin Jr. and R. Robertson, Atlanta, Ga.—p. 11.
*Dynamic Changes in Experimental Pulmonary Embolism. R. S. Megibow, L. N. Katz and F. S. Steinitz, Chicago.—p. 19.
Reduction of Supracondylar Fracture in Children. V. L. Hart, Minneapolis.—p. 33.
Influence of Hypoproteinemia on Formation of Callus in Experimental Fracture. J. E. Rhoads and W. Kasinskas, Philadelphia.—p. 38.
Secondary or Postoperative Parotitis. G. F. Madding and R. E. Fricke, Rochester, Minn.—p. 45.
Influence of Caloric Restriction on Incidence of Spontaneous Mammary Carcinoma in Mice. M. B. Visscher, Zelda B. Ball, R. H. Barnes and I. Sivertsen, Minneapolis.—p. 48.
Experimental Studies on Alimentary Azotemia: III. Site of Blood Absorption. C. F. Chunn, Vicksburg, Miss.; H. N. Harkins and R. T. Boals, Detroit.—p. 56.
Pilonidal Sinuses Occurring over Higher Spinal Segments: Report of Case Involving Spinal Cord. H. P. Kooistra, Grand Rapids, Mich.—p. 63.
*Fusospirochetal Onychia and Paronychia. T. Benedek, Chicago.—p. 75.
*Malignant Meningiomas: Clinical and Pathologic Study. O. A. Turner, W. M. Craig and J. W. Kernohan, Rochester, Minn.—p. 81.
*Thromboangiitis Obliterans: Clinical Observations and Arterial Blood Oxygen Studies During Treatment of Disease with Sodium Tetrathionate and Sodium Thiosulfate. F. V. Theis and M. R. Freeland, Chicago.—p. 101.

Experimental Pulmonary Embolism.—Megibow and his colleagues measured directly, after the experimental production of pulmonary embolisms in 14 normal anesthetized or unanesthetized dogs, the pulmonary and the systemic arterial pressure, the systemic venous pressure and the heart and respiratory rates. Major multiple minor pulmonary embolisms were followed by systolic and diastolic pulmonary hypertension. Changes in the systemic arterial pressure were not striking. The systemic venous pressure usually rose; it rarely fell or showed no change. Changes in heart rate were inconstant. Ventricular fibrillation occasionally appeared terminally in an animal. Rapid progressive respiration usually developed at the same time as or soon after pulmonary hypertension ensued. Most frequently progressive cyanosis accompanied the respiratory changes. The theory of reflex coronary vasoconstriction as a cause of "sudden death" is hardly supported by the experiments, since mechanical factors explain the possible changes in coronary circulation. Death in cases of pulmonary embolism appears to be due to a rapid or slow failure of the right side of the heart, as a result of obstruction to the pulmonary vessel. So-called hypokinetic circulatory failure is in reality rapid failure of the right side of the heart.

Fusospirochetal Onychia and Paronychia.—Benedek believes that his case of onychia and paronychia caused and sustained by fusospirochetal organisms for two years is the first to appear in American literature. The progress of the condition,

without lymphangitis or lymphadenitis, was slow but definite. The local and intravenous administration of neocarsphenamine failed to produce a cure, but the surgical removal of the affected nails resulted in prompt healing.

Malignant Meningiomas.—Turner and his associates state that among 370 intracranial meningeal tumors examined microscopically 36 showed definite malignant characteristics; 22 occurred in men and 14 in women. Twenty-two occurred during the third, fourth and fifth decades and the others among the ages of 8 and 60. The forms of the tumors were frequently bizarre and atypical. This, the authors suggest, is to be considered as progress of the anaplastic process beyond the stage of simple sarcomatous or malignant properties. The giant cells, seen frequently in the 14 more malignant tumors (11 occurred in male patients) were considered by Globus as evidence of vigorous cell growth. He believed that these cells establish a link between quiescent and malignant meningiomas. In many of the 22 low grade tumors or those with early malignant changes early or incomplete forms of giant cells were observed.

Thromboangiitis Obliterans.—Theis and Freeland report observations on studies of the arterial blood oxygen. Deficient oxygenation of the arterial blood was usually present in patients with thromboangiitis obliterans during the active stage of the disease. After two to six weeks of treatment the increase in the oxygenation of the arterial blood was accompanied by clinical improvement and in some cases by recovery (five years). The deficient oxygenation in most of the patients was affected by smoking. Prior to 1937 only sodium thiosulfate was available, but since then sodium tetrathionate (which is slower in action but more prolonged in its effect) has been used. For acutely affected persons, when an immediate effect was desirable injections of the thiosulfate were given every other day and the tetrathionate on the alternate days. As the acute stage subsided, biweekly or weekly injections of the sodium tetrathionate solution were given. The usual intravenous dose was 1 Gm. of sodium thiosulfate and 0.4 or 0.6 Gm. of sodium tetrathionate dissolved in 10 cc. of sterile distilled water. Transitory reactions may occur with either drug, but they are generally relieved by the drinking of a glass of water. No serious reaction occurred after almost 8,000 injections. The appearance of the blood and an occasional sedimentation test are usually sufficient to determine the course of the disease. Passive vascular exercise was used, with benefit, for deficient circulation due to thrombotic occlusion of the peripheral arteries. For patients who have recovered completely all treatment may be discontinued, but when smoking is resumed periodic injections should be continued.

West Virginia Medical Journal, Charleston

38:1-48 (Jan.) 1942

- Public Health Administration. R. H. Riley, Baltimore.—p. 1.
Diagnosis and Treatment of Cardiac Emergencies. W. Dresler, New York.—p. 9.
*Sulfaguanidine in Treatment of "Bloody Flux." G. M. Lyon, T. G. Folsom, W. J. Parsons and Irma Sprouse, Huntington.—p. 19.
Sinusitis with Subsequent Meningitis. E. C. Hartman, G. Geyerhahn and S. A. Solomon, Parkersburg.—p. 27.
Resurvey on 243 Cases of Anterior Poliomyelitis in West Virginia: Report. A. M. Price and Ester M. Finley, Charleston.—p. 29.
Leukorrhea: Its Significance and Treatment. J. A. Hepp, Pittsburgh.—p. 32.

Sulfaguanidine for "Bloody Flux."—Lyon and his associates present data on 259 patients who had "bloody flux" and were treated with sulfaguanidine. The drug has proved to be quickly effective and safe for the treatment of such patients in the home, the office and the hospital. They recommend an initial dose of 0.1 Gm. of sulfaguanidine per kilogram of body weight and thereafter one of 0.05 Gm. per kilogram of body weight every four hours for three days and then the same dose every eight hours for two days. If the patient has not recovered by this time and the character of the stool has not changed they advise treatment with sulfathiazole for five days. Sulfaguanidine, because of its freedom from toxic effects, is preferred to sulfathiazole. Its greater safety is not to be overlooked when treatment must be given in the home. The frequency of failure, relapses, second infections and chronic intestinal indigestion has been greatly lowered by sulfaguanidine therapy.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:759-794 (Nov. 29) 1941

- *Combined Active and Passive Immunization Against Diphtheria II: Control of Epidemics in the Field. F. Fulton, A. Q. Wells, Joan Taylor and C. S. Wilson—p. 759
Industrial Medical Services in Great Britain. Critical Survey. D. Stewart—p. 762
"Ether Convulsions." H. J. Brennan—p. 763
Encopresis (Incontinence of Feces) in Children. C. Burns—p. 767
Macrocytic Anemia Following Gastroenterostomy. N. S. Gordon and J. Japa—p. 769
Geographic Distribution of Gastric and Duodenal Ulcers in British Isles with Notes on Etiology of Peptic Ulcer. B. M. Nicol—p. 780

Immunization Against Diphtheria.—Fulton and his co-workers attempted to prevent the spread of diphtheria in a closed or semiclosed community by detecting all carriers and segregating them until the remaining persons acquired an adequate active immunity. They adopted the following method when an outbreak was evident in a school: 1. Swabs taken from the nose and throat of every child and teacher in nonresidential schools and of every person in residential schools were cultured on tellurite blood agar, and diphtheria bacilli were typed. All strains were tested for virulence to guinea pigs. 2. At the same visit all children were given subcutaneous injections of 0.1 cc of alum precipitated toxoid into the left arm and 350 to 500 units of refined diphtheria antitoxin globulin into the right arm. 3. All carriers were isolated or segregated when the results of the swab culture were known. 4. Four weeks later all children, including the carriers, were given 0.3 cc of alum precipitated toxoid into the right arm. 5. All carriers were allowed to return to school two weeks after the second inoculation. They were permitted to mix freely, but in residential schools they were forbidden to participate in games with visiting teams. Any carrier from whom three consecutive swabs negative for diphtheria bacilli when cultured on tellurite blood agar were obtained before the end of the six weeks of segregation was allowed to return to school. This technique was adopted in seven outbreaks of diphtheria. The population at risk was about fifteen hundred. Each outbreak ceased immediately. Only 5 new infections occurred after the first combined injection. The method protects the children at once, and the closing of schools becomes unnecessary.

2:795-836 (Dec. 6) 1941

- Observations on Some Normal and Injurious Effects of Cold on Skin and Underlying Tissues. I. Reactions to Cold and Injury of Normal Skin. T. Lewis—p. 795
Failure of In Vitro Tests as Guide to Value of Stored Blood. P. L. Mollison and I. Maureen Young—p. 797
**Wound Phagedena. Report of Two Cases. A. Callam and A. Duff—p. 801
Etiology in Adolescents. R. C. Browne and A. Ford Smith—p. 803
Combined Intrauterine and Extrauterine Pregnancy. Case. R. B. Leech—p. 805
Unusual Reticulocytosis in Untreated Case of Pernicious Anemia. W. T. Cooke—p. 806

"Wound Phagedena."—Callam and Duff report 2 cases of a spreading infection of the skin and subcutaneous tissue which arose from an infected wound or sinus. The condition appeared to be one manifestation of a clinical entity, such as postoperative cutaneous gangrene and similar conditions, closely related to the "phagedena" of former times. The infecting agent was an anaerobic streptococcus associated with *Proteus vulgaris*. The condition was so rapidly progressive in 1 case as to be almost inevitably fatal, death occurring on the twenty-first post-operative day. Cure was effected in the other case by wide excision of the lesion.

Lancet, London

2:689-718 (Dec. 6) 1941

- *Trochlear and Kündert III. R. Greene—p. 689
*Response to Vitamin K. Liver Function Test. R. Kark and A. W. Souter—p. 693
Preservation of Liquid Complement Serum. G. M. Richardson—p. 696
Mammary Carcinoma. Response to Implantation of Male Hormone and Progesterone. A. A. Looser—p. 698

Frostbite.—Greene states that the conditions of the present war have produced two disorders, immersion foot and shelter foot, and that these are closely related to frostbite and to trench foot. Shelter foot was often seen among shelter dwellers in

London in 1940 and 1941 who sat up all night without compensating rest in a horizontal position during the day. Immersion foot was encountered in persons who, after a shipwreck, spent a long time in waterlogged boats. In shelter foot the swelling of the feet is painless at first. After a while the swelling extends up the leg. The condition did not arise in wardens who, though exposed to the same degree of cold and damp, were frequently on their feet. The wooden bars of the deck chairs used by most of the patients exerted prolonged pressure on the popliteal fossa, causing venous stagnation and increased capillary permeability. Immersion foot is almost identical with trench foot, and its causes are the same, cold, heat after cold, dampness, venous stagnation, wind, anoxia, nutritional deficiency and trauma all may play a part. In true frostbite the immediate cause is cold, frequently aggravated by wind and anoxia. In trench foot and immersion foot dampness, associated with cold and venous stagnation, is probably the most important factor. Though the four conditions have causes which vary in relative importance they act through a common channel—transudation from damaged blood vessels. One can usually prevent them by bearing in mind their causes. Treatment depends on the stage at which it is undertaken. The premonitory symptom of frostbite of the face may be a white patch, which can be cured by the application for a few seconds of a warm ungloved hand. If the foot or the hand becomes numb the boot and sock or glove must be removed and the limb warmed by placing it inside another man's clothing. Rubbing the affected parts is extremely dangerous. If the tissues are dead they are beyond care, but if they are alive warmth, never greater than that of the human body, will quickly restore circulation. If these measures fail, the affected part should be cleansed gently, painted with an active antiseptic (proflavine), wrapped in sterile dressings and in many layers of wool and rested. Antitetanus serum, hot food and drinks, extra clothing, comparative warmth and security and, if the frostbite has occurred above sea level, pure oxygen are indicated. Thereafter, a policy of inactivity should be pursued unless sepsis develops, when it should be treated like sepsis from any other cause. Amputation, without sepsis, is seldom necessary and never urgent. It may be advisable later for esthetic or orthopedic reasons, but the question should be left to the judgment of a surgeon working amid the conveniences of a hospital at home.

Response to Vitamin K.—According to Kark and Souter, of 200 patients suspected of having hypoprothrombinemia the clinical diagnosis in 51 was portal and biliary cirrhosis, catarrhal jaundice, toxic or infectious hepatitis and intense jaundice. In assessing the type and extent of the hepatic disorder in these patients the authors determined the initial level of the blood prothrombin and its character and degree of response after the administration of vitamin K. There were five types of response. In patients with intense jaundice the low blood prothrombin level returned to normal quickly after vitamin K therapy. This favors a diagnosis of obstructive jaundice. Patients with gross hepatic disease failed to respond to vitamin K therapy. Apparently when the blood prothrombin concentration is less than 30 to 35 per cent of normal, advanced hepatic failure is probable. This is a grave prognostic sign. Patients with a lowered blood prothrombin level which rose somewhat but remained fixed at a subnormal level despite repeated administration of vitamin K had acute or subacute parenchymatous hepatic damage of a moderate and variable degree. For patients in whom the blood prothrombin level gradually rose with treatment, coincident with clinical improvement, the diagnosis was infective cholangitis, catarrhal jaundice, acute or toxic hepatitis or obstructive jaundice complicated by an infective process. When the prothrombin level fluctuated at a subnormal level which was above the threshold for hemorrhage, irrespective of therapy, the patients had chronic and long-standing hepatic disease, usually unassociated with jaundice. For patients with hepatic disease who responded incompletely or not at all to vitamin K therapy, transfusion of fresh blood or fresh plasma was the only therapeutic measure that increased the prothrombin concentration of the blood. Such transfusion should be employed, before and after operation, if any surgical procedure is necessary.

Revista Brasileira de Biologia, Rio de Janeiro

1:365-474 (Dec.) 1941. Partial Index

*Histoplasmosis in Child: Case. E. Villela and Madureira Pará.—p. 449.

Histoplasmosis in Child.—The case reported by Villela and Madureira Pará is the thirteenth in the medical literature, the fifth of the disease in a child and the first in Brazil. The disease is probably more frequent than is believed. It may be mistaken for visceral leishmaniasis, particularly in regions where that disease is endemic. The disease is fatal. The authors' patient, a boy aged 3 years, lived in unhygienic conditions among dogs and cats. He presented fever and progressive debility for one month. Later there developed diarrhea with blood in the feces and progressive emaciation. The treatment consisted in administering polyvalent antidyenteric vaccines and vitamins A and D. Jaundice and red spots over the body appeared one week before death. The diagnosis was made from the microscopic study of the liver, which was enlarged, waxy in color and friable. The microscopic appearance was typical of histoplasmosis. The parenchyma of the liver presented enormous proliferation of reticuloendothelial cells, which were engorged with *Histoplasma capsulatum*. The monocytic cells were also increased and contained histoplasma. Identification of *H. capsulatum* and its differentiation from leishmania in human tissues is best accomplished by the use of Heidenhain's iron hematoxylin stain, the Giemsa, Gram and Goodpasture stains and the double impregnation method of Del Rio-Hortega. The rarity of histoplasmosis in Brazil may be seen from the fact that, of 186,000 cases in which liver specimens were examined microscopically in the laboratory of the Yellow Fever Service, in only 1 has this blastomycosis been found, while in 131 cases in the same series visceral leishmaniasis was discovered.

Revista Médica de Chile, Santiago

69:707-790 (Nov.) 1941. Partial Index

*Bite of Wheat Spider (*Latrodectus Mactans*). R. Gajardo Tobar.—p. 707.

*Treatment of Ringworm Infections of Scalp with Gonadal Substances. Yañez, Weinstein, Bravo and Guzmán.—p. 713.

Serologic Reactions of Syphilis and Their Interpretation in Cases of Venereal Lymphogranuloma. P. Chana Carida.—p. 715.

Angioneuromatous Tumors. L. Marín Couchot and I. Mena.—p. 719.

Black Widow Spider Bites.—Gajardo Tobar describes observations in 23 cases of bite by the black widow spider, *Latrodectus mactans*, a species found throughout Western America from California to Patagonia. The spiders are most numerous during the dry months. Harvesters, stookers and threshers are most exposed. The bite produces a sensation of lancing, and if the cause is searched for the spider may be found in the clothing. The venom of *Latrodectus mactans* is neurotropic. The bite is followed by a ten minute latent period, after which the local pain recurs and rapidly increases to involve the entire body. Clonic contractions, tremors, spasmodic movements and convulsions follow. The symptoms and pains are intermittent and reach their maximum intensity in the waist, arms and legs. The muscular contractions and the excruciating pain bring about rigidity of the abdomen and of the chest. The patient experiences precordial and abdominal oppression and has the feeling of approaching death. There may be disorientation, hallucinations, delirium, debilitating sweats, profuse salivation and lacrimation. The sensitivity of the skin and the reflexes are exaggerated. The respirations are rapid and shallow. Temporary tachycardia is followed by bradycardia. The arterial pressure increases and later falls. Albuminuria and uremia develop. Intestinal and vesical paralysis develop, and the urinary secretion is diminished. There may be priapism, ejaculations and enuresis. After a few hours the symptoms abate somewhat, only to return in paroxysms. The disorder persists for a week. The convalescence is characterized by physical and mental fatigue. The literature reports fatal cases, but as a rule the patients recover. The bite confers a temporary immunity. In animals the immunization persists for about three months. Persons have been bitten by *Latrodectus mactans* several times and each time have had all the symptoms of poisoning. The treatment is chiefly symptomatic. Hot baths, morphine and atropine sulfate are employed to counteract pain, convulsions and spasms. Sparteine and camphor liniment are administered as cardiac

stimulants. Physiologic solution of sodium chloride, dextrose solution and thiamine hydrochloride are given to counteract the intoxication. It would be most desirable to obtain a specific serum as recommended by Vellard and as prepared by Troise in Argentina. The difficulty in producing a specific serum is the insufficient quantity of venom available.

Gonadal Substances in Ringworm Infections of Scalp.—Yañez and his collaborators point out that ringworm infections of the scalp occurring chiefly in children of school age are more or less contagious, depending on the species of fungus. Infections with some species tend to spontaneous recovery after several months. A cure in one region may be accompanied by infection in another, so that the disorder continues for months or years. To obtain definite results it is necessary to resort to depilation of the scalp. With the exception of favus, ringworm infections of the scalp disappear spontaneously at puberty. This fact suggested the possibility of reproducing the pubertal condition which favors elimination of the parasite by the use of estrogens. Yañez injected estrone into a menopausal woman with tinea tonsurans. The infection disappeared in the course of ten days after the administration of five doses of estrone. The authors administered gonadotropic substance to children with ringworm infections of the scalp. The lesions of tinea showed changes from the fourth or fifth day after the beginning of the treatment. The scales disappeared, the diseased hair fell out and the plaques cleared up. The cure was usually complete on the tenth or the twelfth day. There was no apparent difference in the employment of male or of female gonadotropic substance for persons of either sex. The treatment has been used for 34 children (25 boys and 9 girls); failure was recorded in the treatment of 3.

Revista Médica de Córdoba, Córdoba

29:609-650 (Nov.) 1941. Partial Index

*Lymphogranulomatosis Maligna During Childhood. A. A. Ferraris.—p. 609.

Pseudomiliary Colloidal Degeneration of Skin: Case. F. Strada and M. Rodeiro.—p. 621.

Lymphogranulomatosis Maligna in Childhood.—Ferraris believes that malignant lymphogranulomatosis is relatively frequent. Of every 4 boys with enlarged cervical lymph nodes 1 was found to have Hodgkin's disease. The author reports observations on 15 children, aged 5 to 12 years; 14 were boys and 1 a girl. Preponderance of the male sex has been observed by other investigators. The onset is generally insidious. There is a gradual enlargement of the cervical lymph nodes; the general condition is impaired; the child lacks appetite, is pale and at times has fever. In 70 per cent of the cases the author observed splenomegaly and in 60 per cent hepatomegaly. The Wassermann and Kahn reactions were negative in all. The Mantoux reaction was positive in only 2 cases; this incidence was approximately that seen in healthy children. The results of Gordon's test at times contradicted the results of the microscopic examination of the nodes. Sternal puncture likewise proved unreliable. Biopsy of an involved node is the most reliable diagnostic method. The treatment consisted in fractional roentgen irradiation; in some cases of late disease sulfonamide derivatives were given. The disease always terminated fatally in one to five years.

Revista Médica de Rosario, Rosario de Santa Fe

31:1069-1182 (Nov.) 1941. Partial Index

Effects of Digitalis on Electrocardiogram and Its Clinical Significance. C. Alvarez and A. Delle Vedove.—p. 1069.

*Early Diagnosis of Cancer of Breast. J. Benzadón.—p. 1098.

Spontaneous Hemopneumothorax. A. B. Arroyo.—p. 1119.

*Treatment of Mercurial and Bismuth Stomatitis by Ascorbic Acid. J. V. Marín.—p. 1127.

Benign Lymphocytic Meningitis. L. Levit, E. S. Weiler and J. Luppi.—p. 1135.

Early Diagnosis of Cancer of Breast.—A hard, woody painless tumor whose borders are vaguely defined, suggests, according to Benzadón, a malignant degeneration of a benign tumor. The hard, woody consistency, which does not permit folding while one picks the tissue up between the hands, is characteristic of malignant growth. Retraction of the nipple may appear later than the aforementioned signs; its presence in

a tumor which shows no signs of inflammation confirms the suspicion of malignancy. Pinching of the skin over a tumor may reveal adhesion to the skin otherwise not observed. This fold test indicates that the neoplasm is malignant. Walther's sign or the wrinkle sign has the same significance. A positive Halsted sign is of great value. A black spot of inklike shadow with irregular outlines on transillumination suggests a malignant tumor. Pneumomastic roentgenoscopy (introduction of air, oxygen or carbon dioxide before roentgenoscopy) can aid in the early diagnosis by revealing a shadow more opaque than the gland with indistinct outlines and at times with diminution of one of the clear spaces. Mammography with the injection of a contrast medium in cases of malignant tumors is not innocuous. Punch biopsy with the finding of malignant cells confirms the diagnosis. A negative biopsy does not establish the diagnosis. Punch biopsy may be valuable in differentiating a solid from a liquid tumor and a neoplasm from a chronic suppurative process. The author does not recommend biopsy; he prefers a complete extirpation of the tumor and a microscopic examination. Early diagnosis is possible, provided the patient consults a physician early enough.

Ascorbic Acid in Mercurial and Bismuth Stomatitis.—Marín observed mercurial and bismuth stomatitis among syphilitic patients. Absence of ascorbic acid from their blood and urine suggested the advisability of administering the acid. His experience with ascorbic acid therapy in 10 cases of syphilis suggests that the acid has a detoxicating effect on the mercurial salts probably because of its reducing action. Ascorbic acid cures mercurial and bismuth stomatitis. It permits continuation of serial mercury and bismuth therapy for patients who do not tolerate compounds of these metals. Injection of large doses of ascorbic acid produces rapid, optimal results; its oral administration is not effective.

Revista Med. Soc. de Sanidad y Benef. Municip., Havana 1:79-158 (Oct.-Dec.) 1941. Partial Index

*Whooping Cough in Havana: Preventive Vaccination. A. Argudin García.—p. 103.

Vaccination in Whooping Cough.—Argudin García, head of the Municipal Department of Infant Hygiene of Havana, administered vaccines against whooping cough to 1,556 infants who were observed in the department from January to July 1941. The vaccine used was prepared with pure pertussis antigen. It was administered subcutaneously in doses of 0.25, 0.5, 0.75 and 1 cc., with intervals of three days. No untoward reactions occurred. In a large number of children the hemogram after vaccination changed to that of the type of whooping cough, showing acquired immunity. Whooping cough developed in only 5 per cent of the vaccinated children, and it was attenuated. The morbidity and mortality diminished.

Zentralblatt für Chirurgie, Leipzig 68:1473-1576 (Aug. 9) 1941. Partial Index

Treatment of Uncomplicated Fracture Luxations in Ankle Joint. A. Buzello.—p. 1485.
Histologic Aspects of Meniscus After Accidental Injuries. W. Ceelen.—p. 1491.

*Involvement of Arteries in Intermittent Claudication of Arm: Treatment by Periarterial Sympathectomy. K. Ebbardt.—p. 1499.
Fenestrated Plaster Bandages and Hoop Bandages. J. C. Lehmann.—p. 1516.
Experiences with Close Range Roentgen Irradiation According to Chaoul. H. Schneider.—p. 1519.
*Etiology and Therapy of Tendovaginal Panaritium. E. R. Welcker.—p. 1564.

Periarterial Sympathectomy for Intermittent Claudication.—Ebbardt reports that a youth aged 19 sustained a fracture of the radius, which was treated with a cast and which healed in a good position. A swelling of the arm remained, and movement of the wrist joint was slightly impaired. Several months later attacks developed during which the hand and arm became blue, cold and insensitive. A thrombotic closure of the axillary vein was considered, but, since the symptoms responded to conservative measures, intervention appeared unnecessary. Two years after the fracture, while swimming, the patient suddenly had a circulatory disturbance in the arm. The member became cold, cyanotic, insensitive and painful. The attack lasted

for half an hour. Considerable exacerbation of symptoms took place. An operation disclosed that the disorder was the result not of venous thrombosis but of a spasm of the vessels which resulted from a chronic induration of the axillary connective tissue. Freeing of the artery failed to improve the circulation. A periarterial sympathectomy was successful in ameliorating the condition. The author does not consider sympathectomy as the procedure of choice for the treatment of intermittent claudication but believes that it is advisable only for some particularly constituted patients.

Tendovaginal Panaritium.—According to Welcker, clinical observation and bacteriologic studies demonstrated the etiologic significance of the subcutaneous panaritium in the development of the tendovaginal abscess. Early and correct surgical treatment of the subcutaneous panaritium is the best prophylactic measure against the involvement of the tendon. Simple opening of the proximal end of the tendon sheath (modification of Iselein's method) as treatment of tendovaginal suppuration of the second and fourth fingers with suspension of the splinted arm produced surprisingly favorable results in cases in which the tendon itself had not become involved. The results of this intervention were especially favorable in regard to functional restoration.

Nordisk Medicin, Stockholm

12:3227-3306 (Nov. 15) 1941. Partial Index
Hospitalstidende

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Adult or Idiopathic Myxedema and So-Called Benign Hypothyroidism.—Jarlöv compares classic myxedema (British Myxedema Commission) and benign hypothyroidism (Hertoghe) and reports 78 cases of so-called hypothyroidism. He concludes that clearcut myxedema is rare. Certain symptoms which must be regarded as symptoms of classic myxedema occur in as many patients with normal basal metabolic rate as in patients with a lowered rate. This is true of the myxedematous habitus, which occurred in only 1 of 7 younger patients and in 4 of 8 older patients with a lowered rate and in 6 of 29 younger patients and in 8 of 17 older patients with a normal rate. Impairment of memory, edema, dryness of the skin, loss of hair, brittleness of the nails, oliguria and amenorrhea were relatively infrequent symptoms. Dryness of the skin affected the younger patients with a normal rate more than any other group. Nervousness and headache were relatively frequent. Constipation and adiposity occurred in more of the groups with a normal rate than in those with a lowered rate. The sensation of cold played a relatively important part in the groups with a lowered rate, but in all the groups it responded well to treatment with thyroid, as did also the tired feeling, important in all groups but wholly absent in some patients with otherwise typical myxedema. The author asserts that adiposity does not play the part in hypothyrotic symptoms formerly ascribed to it. There were relatively many patients with a normal basal metabolic rate and symptoms like those of classic myxedema who reacted so favorably to thyroid therapy that they must be assumed to have had a thyroid deficiency. A lowered rate must therefore be regarded as a symptom coordinated with the other symptoms. In the material all transitions were represented from cases with the symptoms of classic myxedema to cases characterized by only one or a few of these symptoms. Certain cases of asthenia and of stubborn constipation, cases interpreted as of muscular rheumatism, some cases of edema and some others were included. Neither the symptoms named nor the lowered metabolic rate can determine the indications for thyroid therapy or the dose; only the reaction to the substance in each case can be applied as the criterion. He suggests that with the present status of knowledge the designation hypothyroidism be maintained for a number of pathologic conditions having certain common features and forming an indefinitely limited group which can be divided into two indefinitely limited subgroups, malignant and benign hypothyroidism.

Book Notices

Subacute Bacterial Endocarditis. By Emanuel Libman, M.D., Consulting Physician, the Mount Sinai Hospital, New York City, and Charles K. Friedberg, Adjunct Physician, the Mount Sinai Hospital. Edited by Henry A. Christian, A.M., M.D., LL.D. (Reprinted from Oxford Loose-Leaf Medicine.) Cloth Price, \$2.75. Pp. 108, with 19 illustrations. New York, Toronto & London: Oxford University Press, 1941.

This excellent summary of subacute bacterial endocarditis is based in large part on Libman's own long experience with the disease. He writes, for example, that between 1899 and 1930 he had observed at least 1,000 cases. The book is subdivided into sections on definition and classification of endocarditis, classification of bacterial endocarditis, the various aspects of subacute bacterial endocarditis including etiology and pathogenesis, pathology, clinical features, diagnosis, cases of mild subacute bacterial endocarditis, bacteria free stage of the disease, transitional endocarditis, recurrent endocarditis, prognosis, cause of death, prophylaxis and treatment. There is a bibliography of one hundred and ninety-eight references.

There are many pertinent observations concisely made, a few examples of which in the first fifteen pages are:

Bacterial endocarditis is subdivided into acute and subacute bacterial endocarditis. As implied in the terminology, these subdivisions are based on the duration of the disease, the acute form including cases with a course of, in general, less than six weeks, and the subacute, cases with a course of more than six weeks. This differentiation, however, is not an arbitrary one except in certain borderline cases. The two forms of bacterial endocarditis are, as a rule, sharply distinguishable both as to their causative agents and as to their clinical and pathological features. The acute cases are due almost always to pyogenic organisms, while the subacute cases are caused by organisms of relatively low virulence.

Bacterial endocarditis is a terminal or terminating complication in about 10 to 20 per cent of cases of rheumatic heart disease. . . . Subacute bacterial endocarditis occurs much more frequently than acute bacterial endocarditis. In over 90 per cent of the cases the causative organisms are nonhemolytic streptococci, usually the alpha (viridans) and occasionally of the gamma (anhemolytic) variety.

Subacute bacterial endocarditis may appear in the presence of a mixed infection. The most common combination is an endocarditis due to non-hemolytic streptococci with a secondary pneumococcus bacteremia, usually secondary to a lobar pneumonia. We have observed also a secondary implantation of *Staphylococcus aureus* on valvular vegetations due to non-hemolytic streptococci.

Agonal and postmortem blood cultures usually are unreliable.

An adequate quantity of blood must be drawn, at least 20 cc, and a variety of media employed. Aerobic and anaerobic cultures should be made. Since the organisms may enter the blood stream from the vegetations only intermittently, it may be necessary to take repeated blood cultures in order to find the causative organism.

Blood cultures should be observed for a minimum of four days, but it is preferable to keep them routinely for eight to ten days. Sometimes it is advisable to observe the cultures even longer, for, especially after chemotherapy, such as with sulfanilamide or sulfapyridine, growth of the organisms may not be discovered until after two or three weeks. The blood cultures even may remain completely sterile as long as the patient is under treatment with these drugs while positive cultures are obtained subsequently, when they are stopped. Recently reported studies (Strauss, Lowell and Finland) indicate that by the employment of paramino benzoic acid, which inhibits sulfonamide action, it will be possible with such a negative result as is obtained to determine whether bacteria are really absent. This interesting substance has most effect against sulfanilamide, less against sulfapyridine and still less against sulfathiazole.

Usually the site of origin of the endocardial infection is not evident. Clinical observation leads us to the assumption that the portal of infection is, as a rule, about the teeth or in their roots, in the tonsils, in the accessory sinuses or in other parts of the upper respiratory tract.

The sites of localization of the bacterial endocarditis are determined chiefly by mechanical factors. There is evidence that bacteria settle and multiply wherever they are sprayed forcefully on a receptive area.

Active rheumatic fever and subacute bacterial endocarditis may occur simultaneously in the same patient and even on the same valve.

Libman has reported a case in which the disease developed in a mitral valve which had been made insufficient because of infarction of the left posterior papillary muscle due to a coronary artery thrombosis.

Of special interest is the association of subacute bacterial endocarditis with bicuspid aortic valves.

Congenital anomalies are next in importance to rheumatic deformities as predisposing factors of bacterial endocarditis.

The oldest patient we have seen was 74 and the youngest a child of 4. There is no significant predilection as regards sex, but in our experience males are affected somewhat more commonly.

Here and there one might like a little more ample discussion about details, and one might question whether a few of the cases quoted, particularly case 2 and case 3 on page 82, are sure instances of the disease with recovery. However, the volume can be wholeheartedly recommended.

The Story of Clinical Pulmonary Tuberculosis. By Lawrason Brown, M.D. Cloth Price, \$2.75. Pp. 411, with portrait. Baltimore: Williams & Wilkins Company, 1941.

For approximately two decades Dr. Lawrason Brown was regarded as the dean of authorities on clinical pulmonary tuberculosis in this country. Large numbers of tuberculous patients used his book entitled *Rules for Recovery from Tuberculosis* almost as their Bible. Medical audiences throughout the country listened to his addresses, and those who were fortunate enough to attend the Trudeau School of Tuberculosis reveled in his inspiring lectures on the history of clinical pulmonary tuberculosis. This new book will be heartily welcomed by the members of these various groups and by many other readers. The historical material presented is authentic, and Dr. Brown's own views and opinions are of great value, since he was a physician of unusually good judgment. It is particularly fitting that Dr. Homer L. Sampson should have contributed the chapter on x-rays, since it was he who was called almost from his bed as a patient in the Trudeau Sanatorium in 1912 to operate the first x-ray equipment installed in that institution. From that time to the present he has worked unceasingly at this post. No physician ever had a more loyal supporter and collaborator than Dr. Brown had in Dr. Sampson. In many ways and on numerous occasions Dr. Brown expressed his appreciation of Dr. Sampson's work. They labored together in learning how to improve the quality of the finished x-ray plate and film and how to interpret the shadows which it revealed. After the regular day's work they could be found in the x-ray laboratory, working until late at night to develop the roentgenographic phase of examination of the chest. Indeed, they inspected the plates and films of the chests of nearly half a million persons, and from their arduous work came numerous valuable contributions. Twenty years ago Dr. Brown manifested a great deal of enthusiasm for surgical methods in the treatment of pulmonary tuberculosis and was particularly loud in his praise of the splendid work of Dr. Edward W. Archibald of Montreal. They frequently conferred on this subject, and Dr. Brown referred patients to Dr. Archibald when he thought they would be benefited by surgical intervention. He recognized not only the great skill which Dr. Archibald possessed but his studious quality, which caused him to be regarded as one of the best informed chest surgeons in North America. Dr. Archibald's chapter, on the development of surgical methods in treatment, is an important contribution to the book. Dr. Brown spent many years compiling historical material on all phases of clinical pulmonary tuberculosis, and it is fortunate for the medical profession that this has been published in book form so that it will be preserved and available to physicians everywhere. An excellent bibliography is included.

Über Grundumsatz und Sexualhormone nach Kastration: Klinische und experimentelle Studien. Von E. Hart Hansen. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København, 1940. Paper Price, 12 Danish kroner. Pp. 211, with 30 illustrations. Copenhagen: Ejnar Munksgaard, 1941.

Denmark in 1929 was the first state in Europe to introduce castration into the modern administration of justice. There castrates are legally obliged to submit to examinations conducted by the medicolegal council. The problem of the author, who was awarded the opportunity to reexamine castrates in the Institute of Legal Medicine, was to observe (1) the occurrence of castration obesity in legally castrated men in Denmark, (2) the behavior of the basal metabolism in legally castrated persons, (3) the relation between castration obesity and changes in the basal metabolic rate, (4) the excretion of gonadotropin, estrogen and androgen in the urine after castration, (5) the effects produced on rats by the estrogen and androgen detected in the urine and (6) the relation between the results of the hormone analyses and of the determination of basal metabolism and the results observed in routine examinations. The author's conclusions were based on observations on 45 castrated persons, 24 ambulatory, 12 under institutional observation and 9 in an asylum for the feeble-minded. Causes of castration were feeble-mindedness in 14 cases, psychopathy in 18, commitment to an institution in 12 and epilepsy in 1. His control material consisted of 14 healthy men, castrated women and men with other diseases.

Hansen found that castration obesity occurred in only 15.4 per cent of his subjects, proof that weight changes in male castrates are not ordinarily significant. The basal metabolic rate was less than 90 per cent in 6 of 38 castrates. No important information concerning reduced function of the male gonads was revealed by the basal metabolism examinations. Castration obesity and decreased metabolism did not run parallel. Of 38 subjects examined, 1 with castration obesity and 4 without castration obesity showed a decreased basal metabolic rate; 5 with castration obesity and 28 without castration obesity were without a decrease in the rate. An increased excretion of sex hormone occurred after castration of men. Estrogen excretion was less in noncastrated men than in those who had been castrated. The urine of men contained smaller amounts of estrogen than that of women. In general, castrates excreted smaller amounts of androgen in the urine than normal men. Improved methods resulted in an increase in the amount of androgen which could be detected. Injections of androgen into castrated male rats produced an increase in weight of the prostate, the seminal vesicles and the penis. Injections of estrogen into female castrated rats caused doubling of the weight of the vagina and cervix. The results of the preceding experiments were compared with parallel experiments with androsterone in capons.

The author found no difference in the relationship between the results obtained in the determination of the basal metabolic rate and the results of the hormone analysis in subjects with a rate less than 90 per cent and those with a rate greater than 90 per cent. Obesity did not influence the results. These data, while of no value in reexamination of the individual, are in no wise derogatory to the application of castration on a legal basis. The hormone balance of the organism is influenced by post-puberal castration. This is evident from the increased excretion of gonadotropin and the decreased excretion of androgen and estrogen in the urine. The author states that this investigation has revealed no causal connection between androgen secretion and the remains of libido and potency of castrates.

It may be assumed that a metabolism of substances (related to cholesterol and provided with sex hormone properties) takes place in the organism. These substances exert a specific influence on the morphology and function of the secondary sex characters. This metabolism is under the influence of the gonads but does not stop after castration. Finally, the importance of such scientific investigations in a state such as Denmark, where castration is on a legal basis, is stressed.

Chinese Lessons to Western Medicine: A Contribution to Geographical Medicine from the Clinics of Peiping Union Medical College. By I. Snapper, Professor and Head of the Department of Medicine, Peiping Union Medical College, Peiping. With a foreword by George R. Minot, Professor of Medicine, Harvard University, Boston. Cloth. Price, \$5.50. Pp. 380, with 132 illustrations. New York: Interscience Publishers, Inc., 1941.

This book, written in a breezy, narrative style, does not purport to be a systematic study of the diseases characteristic of North China but is rather a record of the impressions of the author, a Dutch clinician with a worldwide reputation, during the first two years following his transplantation to the Peiping Union Medical College. These impressions are, however, in most instances carefully documented from the hospital records and are supported by many excellent illustrations and detailed case records.

Although Peiping is situated at a latitude of 40 north, about the same as that of Philadelphia, its diseases are largely tropical or semitropical, and one is struck, on first visiting the wards of the Peiping Union Medical College Hospital, with the preponderance of patients with acute infectious disorders. Dr. Snapper thus gives due prominence to relapsing fever, typhus and amebiasis, all of which lend color to the practice of medicine in China, but even more to kala-azar, the parasitic disease which places its mark all over internal medicine in North China and which is so frequent that it has to be considered in nearly every case.

The manifestations of cardiovascular disease in North China are considered in detail, and one of the common myths about China, i. e. that the Chinese, owing to the placidity of their dispositions, are not subject to hypertension, is disposed of. Essential hypertension, both benign and malignant, is common.

Arteriosclerosis, however, with the syndrome of angina pectoris and with coronary occlusion and myocardial infarction, is rare, and Dr. Snapper speculates about the relationship of the low cholesterol intake and the consequent low blood cholesterol concentrations in the Chinese to the reduced tendency to lipid infiltration of the blood vessel wall, pointing out at the same time the relatively high figures for the unsaturated fatty acids, especially linoleic and linolenic acids.

There is an extended consideration of the anemias, concluding with the statement that, while macrocytic nutritional anemia is frequent, genuine pernicious anemia rarely occurs. Dr. Snapper also calls attention to the prevalence of diabetes mellitus and rickets, without noting that it used to be said of these disorders, as of hypertension, that they did not occur in China. With the establishment of the Peiping Union Medical College and of its hospital, to which Dr. Snapper refers as now one of the best modern teaching hospitals, the search for these conditions really began, and they appeared with about the same frequency as in the United States.

It is pointed out that every phase of clinical medicine in Peiping is influenced by the peculiar food situation, which leads to general undernutrition, by deficiencies of all the vitamins except those of the B complex. In North China the B complex vitamins are provided by the relatively large intake of a coarse, whole ground millet, in contrast to the diet of polished rice common farther south.

The book should be required reading for any one whose attention, for any reason, is being drawn to the problems of medicine in the Orient.

Xanthoma and Other Dyslipoidoses. By Fred D. Weidman, M.D., I. Napoleon Boston, M.D., Joseph Stokes, Jr., M.D., Howard W. Schaffer, M.D., Walter Freeman, M.D., and F. W. Sunderman, M.D. [Including Reprinted Articles from the Archives of Dermatology and Syphilology, Archives of Internal Medicine, American Journal of Diseases of Children and Archives of Surgery.] Cloth. Price, \$3. Pp. 195, with illustrations. Philadelphia: University of Pennsylvania Press, 1941.

In the introduction Weidman knits the thoughts that prompted these papers and their grouping and stresses the significance of "xanthoses and lipoid disturbances, related diffuse conditions and the growth in knowledge which has been so remarkable that nearly every branch of medicine has become involved to a greater or lesser extent by its ramifications: dermatology, internal medicine, surgery, ophthalmology, pediatrics, otolaryngology, stomatology, physiologic chemistry and pathology." The book contains an index aimed to correlate the biologic phases of xanthoma, particularly the pathologic data, and an article on the pathology of the yellowing dermatoses which is useful from the clinical angle because it will assist in the differential diagnosis of certain of its members from the xanthoma group. This work is recommended to all practitioners in medicine for its excellence and the broad scope of its correlation of xanthoma as a possible manifestation of a medical entity in the skin. The enlarged concept of dermatology, including xanthoma, acute disseminated lupus erythematosus (Libman-Sacks syndrome), the purpuras, tuberculids, drug eruptions and the lymphoblastomas easily fulfil their relationship to medicine in general as cutaneous medicine.

Semiologia do ovário com um estudo particular da citologia vaginal pela método de Shorr. Pelo Dr. Francisco Victor Rodrigues, professor de clínica ginecológica da Faculdade fluminense de medicina, Rio de Janeiro. Cloth. Pp. 286, with 35 illustrations. Rio de Janeiro: A Casa do Livro Limitada, 1941.

This is an excellent study based on the literature and presenting first the embryology, anatomy, pathology and physiology of the ovaries, with few illustrations. After this portion the author goes into the chief material of the volume, which might better be entitled the functional examination of the ovaries. (The author does not include the direct physical examination of the ovaries, as the Portuguese title would suggest.) This is illuminated by detailed studies of 36 of his own cases, including a number of excellent illustrations, some colored, especially of the vaginal smear method of Papanicolaou and Shorr, which the author interprets correctly and makes much use of. In addition to an extensive bibliography which shows an appreciation of the world literature up until late in 1941 the author includes the list of his publications in this general field of gynecology.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RENAL CALCULI AND SULFONAMIDES

To the Editor—The question of sulfonamide derivatives causing renal calculi has come to my attention recently through the queries of patients and I would appreciate information on the following. Does the formation of renal calculi have any bearing on the administration of sulfonamide drugs? If so, does the drug predispose to the formation of the usual type of stone or do the crystals of the drug collect to form a foreign body in the kidney pelvis? Does the dose of the sulfonamide drug influence the formation of calculi? And, if renal calculi existed before the administration of the drug, would the drug aggravate the condition? If the sulfonamide drugs do form renal calculi, are they permanent or are they dissolved after withdrawal of the drug? What drug of the sulfonamide group is most likely to form crystals in the urine and possibly assemble in the kidney pelvis to form a foreign body visible by x-ray examination? Does the administration of iodized oil for bronchography have any therapeutic value, if so, what and for what?

Louis S. Miles, M.D., Summerville, S.C.

ANSWER—We have no evidence which would indicate that the sulfonamide drugs bear any relation to the formation of renal calculi, either by predisposing toward, or aggravating, existing calculi. The so-called crystals of the drug do not form calculi in the sense with which we usually associate that term, rather they form needles or crystals which in themselves may cause damage or which may "coalesce" to result in larger bodies. Perhaps some consider these larger bodies as calculi, but the term would be a misnomer.

The crystalline bodies which may form following the use of certain sulfonamides tend to disappear on withdrawal of the drug or following the forcing of fluids. However, there are records of necropsies which have shown the masses too large for excretion by the ordinary channels. This explains why so much attention is given to daily examination of the urine when sulfonamide therapy is in progress.

Information does not appear to be available as to the visibility of these bodies by x-ray technique.

The drug which would most likely form crystals in the urine is sulfapyridine.

We have no evidence of any therapeutic value associated with the administration of iodized oil for bronchography.

STERILITY DETECTORS—DIACK CONTROL, STERILOMETER AND ASEPTIC-THERMO INDICATOR

To the Editor—What products are considered reliable for determining the sterility of autoclaved materials?

Ansel Woodburn, M.D., Urbana, Ohio

ANSWER—A number of devices designed to indicate whether or not materials in autoclaves have been sterilized are on the market and in common use. Three of these in particular have been the subject of numerous investigations. The Diack Control is a small sealed glass tube containing a reddish crystalline substance which is supposed to melt or fuse and change color at 121°C. Obviously this reaction is largely or entirely dependent on the single factor of temperature. The Sterilometer is a thermometer-like drawing on a square piece of cardboard, the bulb of the thermometer is said to turn black promptly on exposure to moist heat, and the stem to turn black after subjection to steam at 110 to 120°C for fifteen minutes, or under conditions which insure destruction of all micro-organisms including the spore formers. The Aseptic-Thermo Indicator, which is similar in principle, has a lavender arrow on a green dial pointing to the figure 250°, under the conditions of heat and moisture just described the arrow turns green so as to match its background.

In 1933 T. B. Maath reported a study of Aseptic-Thermo Indicator (*Mod Hosp* 41:112 [Sept.] 1933) in which twenty-five of these devices were tested and were found to turn green only after exposure to 121°C for twenty minutes. The conclusion drawn was that these indicators are satisfactory for testing sterilization with steam under pressure for all uses in bacteriologic laboratories and hospitals. A further investigation of these products was carried out under the auspices of the A. M. A. Chemical Laboratory (*THE JOURNAL*, Nov. 24, 1934 p. 1621). Both the Sterilometer and the Thermo Indi-

cator were found to be efficient in determining sterilization by the autoclave. It was felt that neither type could cause a false sense of security, since whenever the reaction or change was irregular the change was on the side of safety and failure of matching.

These opinions were not corroborated by subsequent investigations, however. Quigley at Johns Hopkins Hospital after extensive studies concluded that the three devices are all unreliable, and their use in that institution was discontinued forthwith (personal communication). Underwood, whose book (*A Textbook of Disinfection*, Erie, Pa. American Sterilizer Company, 1934) is based on investigations carried out in several leading medical centers, contended that none of these indicators are fully trustworthy, although of the three types the Diack Control is the most uniform and generally satisfactory. Underwood cites the work of Lcker, who found that Diack controls fuse at 122°C in two minutes, at 118°C in five to ten minutes and at 115°C in ten to fifteen minutes, that sterilometers change color with the least exposure to steam, the color becoming black with high temperatures, intermediate changes of color being variable and difficult to interpret correctly, and that Aseptic-Thermo indicators show no color changes short of 124°C for fifteen minutes or 121°C for twenty minutes, this requirement being too high since it spoils rubber goods and dextrose solutions. Underwood criticized pasteboard indicators because they show some color changes at less than regulation temperatures, because the color fades somewhat in sunlight, because any hydrogen sulfide gas present may cause misleading color changes (in sterilometers), because the degree of color change requires interpretation and thus adds a factor of uncertainty, and because the cards cannot be extracted from the centers of packages without disturbing the covers and contaminating the contents.

The most damaging evidence against these telltale indicators was submitted by C. W. Walter (*Surgery* 2:582 [Oct.] 1937), who tested one thousand each of the three types. A glass steam pressure chamber was used so that the products could be observed constantly under controlled conditions of temperature, pressure and moisture. Walter found that there were discrepancies between individual Diack controls, that they melt equally in dry and moist heat, and that most of the samples melt in one minute or less at the usual sterilizing temperatures, although in some tests melting was delayed longer than the time usually required for sterilization. Sterilometers were found to have an extremely poor end point of color change. Most of the samples of this product showed complete blackening in less than six minutes, the average time being well below the advertised and published claims, some, however, showed delayed color changes which in practice might have resulted in unnecessary resterilization of the loads. Aseptic-Thermo indicators likewise had poor end points, the majority of samples changing color in less than twelve minutes, although in some change was unduly delayed. On the whole, the indicators were found to be the most consistent of the three types of devices. Walter concluded that the expense of using telltale indicators to certify sterility is not justified because of disparity in individual performance and that the large personal equation in placing and interpreting them makes their use of doubtful value in general hospital practice.

Concerning these devices, Elhott C. Cutler says editorially (*Surg., Gynec. & Obst.* 67:531 [Oct.] 1938) "Various sterility detectors have been devised to assure the surgeon sterile supplies, but such detectors have proved inadequate."

Other methods have been utilized in the effort to insure sterilization by autoclaves. Maximum thermometers proved impractical, since they cannot be placed conveniently inside representative packages of material and since they give no indication of how long the maximal temperature has been maintained. It has been suggested that a thermometer be placed in the discharge line of autoclaves in the belief that the temperature in the sterilizing chamber is certain to be as high as or higher than it is in the exhaust pipe. Timing in such a case should commence when the escaping steam has reached the standard sterilizing temperature (e.g. 121°C). This is a simple method which has much to recommend it. The most satisfactory and reliable detector thus far devised is the recording potentiometer. Thermocouples placed inside representative packages in the autoclave lead to an instrument which records continuously on a time chart the temperatures inside those packages. By this means the desired temperature for the desired length of time inside all the bundles of a load can be virtually assured. Unfortunately these recording potentiometers are rather expensive. For the sterilizing departments of large hospitals an apparatus of proved worth is "Micronax," a multiple recording potentiometer with as many as eight leads,

manufactured by Leeds and Northrop Company, Philadelphia. Walter (*ibid.* 67:526 [Oct.] 1938) has described a control mechanism to be used in connection with a potentiometer which automatically locks the door of the autoclave until standards of sterilization have been met. He claims that this apparatus can be used to eliminate "faulty sterilization due to failure of the sterilizing equipment and ignorance or negligence on the part of the attendant."

It must not be thought, however, that the problem of steam sterilization has been fully solved or that any fool proof method of carrying out the procedure has been discovered. The basic requirement for certain and satisfactory sterilization is that every part of the load, even the center of large, dense packages, should be subjected to moist heat of 121-126 C. for more than fifteen minutes or 115-121 C. for more than twenty minutes, conditions which are known to kill the most resistant microorganisms. The main difficulty lies in adequate expulsion of air from the autoclave chamber and avoidance of pockets of air inside glass jars, rubber gloves and bundles of fabric. Steam and air mix slowly, and diffusion of heat from steam to air requires time. Even after sufficient steam has entered the sterilizer to raise the pressure gage to 15 pounds, air pockets may for a long time show substandard degrees of temperature and moisture. Pressure gages are untrustworthy, therefore, for the purpose of timing steam sterilization, since it is moist heat, not pressure, which kills the bacteria. The best indicator, as has been pointed out, is a recording potentiometer with leads inside large, dense packages and other places where air is apt to pocket or where penetration of steam may be delayed, and the timing of the period of sterilization should not begin until the temperatures in those regions has reached the predetermined standard. Ideally there should be a companion device to indicate whether the heat in those regions is sufficiently moist, since dry heat of 121 C. or less may not kill all the organisms. Some idea of the degree of penetration of steam to the thermocouples can be obtained, however, by noting the lapse of time between closure of the discharge line of the autoclave and the registering of 121 C. by the potentiometer. Ordinarily this requires less than twenty-two minutes (Quigley). If this rise in temperature requires more than twenty-two minutes, it is presumptive evidence that penetration has been delayed unduly and that dangerous pocketing of air has occurred which requires reexamination of the load and a fresh attempt to expel air from the sterilizer.

In conclusion it should be emphasized that pressure steam sterilization cannot be assured without intelligent and conscientious attention to the rules which govern preparation of packages, assembling of loads and operation of the autoclave. Sterility detectors should be viewed as stimulants and correctives, not as substitutes for careful work on the part of the attendant.

CHILBLAINS

To the Editor:—I have been given the following history concerning a woman aged 26 whom I have not seen and who lives in a cold climate: "When she was a little girl her shins were frozen and now in cold weather the shins become red, chap easily and hurt some. In very cold weather they may bleed a little." In your opinion is it possible for these symptoms to be due to "freezing of the shins" twenty years ago?
M.D., California.

ANSWER.—This young woman probably has chilblains or erythema pernio, which usually affects the extremities of subjects with poor peripheral circulation. It appears as various shades of red and purple infiltrated patches and plaques, which are tender and itch or burn, and, characteristically, cold weather incites their presence. The parts are cool to the touch, and the redness disappears on pressure. The manifestations tend to disappear in the warmer seasons. The disease is most prevalent in damp, cold climates. It affects people with the so-called chilblain circulation, which is feeble and is sometimes denoted by cold hands and feet.

In some cases chilblains and its background of impaired circulation becomes difficult to distinguish from livedo reticularis of the extremities, acrocyanosis and erythrocyanosis. A dusky reddish appearance may be imparted by permanently dilated superficial blood vessels, giving a reticulated and marbled pattern. Such changes in the vessels can be produced by syphilis, tuberculosis and toxemias; anomalies of the blood vessels and arteriosclerosis as well as infectious processes may be other causes. A tuberculous background not infrequently may be present in those with poor circulation and subject to frostbite.

Simple pernio needs to be differentiated from lupus pernio, which is a type of sarcoidosis. The latter is a manifestation of tuberculosis, a large number of observers believe. It manifests itself as erythematous symmetrical areas that are infiltrated and

thickened. They vary in color but are often a type of bluish red. They may have dilated blood vessels coursing over them. The diagnosis is readily made by microscopic examination. The tissue has a characteristic appearance. The treatment is with arsenical and gold administrations and exposure to roentgen rays. This type of lupus pernio is the so-called Besnier variety, probably due to tuberculosis.

A second variety of lupus pernio, the Hutchinson type, or chilblain lupus, is a manifestation of lupus erythematosus. This consists of infiltrated erythematous patches and plaques which are aggravated in cold weather. The lesions occur on the face and extremities. Early they look like chilblains but later become more infiltrated and permanent and then look like lupus erythematosus. This type lacks the brownish nodules seen in the Besnier type when viewed through a glass pressed against the surface. Later the plaques are bluish or violaceous and scale, and finally they show atrophy, beginning first at the center. The histologic changes are those found in lupus erythematosus. The greatest difficulty in distinguishing these lesions from ordinary frostbite is present early before tumefaction occurs. Ordinarily, however, chilblains disappears in warm weather, but lupus pernio continues on, though the latter is worse in the winter.

The treatment of chilblains is by attention to the health in general. A tuberculous background, for example, may be present. The circulation should be improved with exercise and locally by friction and massage. Camphor liniment or bay rum may be applied. The extremities may be covered thoroughly with talcum and wrapped in cotton wool held in place by a bandage. The extremities should be kept warm continuously. The administration of arsenic before cold weather sets in is considered prophylactic. The cautious use of acetylcholine and related materials locally as by iontophoresis may be considered as of the newer remedies and not entirely evaluated at present.

ULTRAVIOLET BURNS OF THE EYE

To the Editor:—With the expansion of the heavy industries' the number of cases of ultraviolet burns of the eye has greatly increased. Can any curative substances be used locally in the eye in such cases?

Jonas S. Friedenwald, M.D., Baltimore.

ANSWER.—Inflammation of the eye caused by ultraviolet rays involves only the cornea, causing a characteristic photophthalmia. Only the epithelial cells are involved, although in prolonged exposure the superficial substantia propria may be attacked. The corneal surface is stippled, slightly at first, but, as the latent photochemical reactions develop, the individual epithelial cells extrude their nuclei and finally desquamate. The entire process is characterized by extreme rapidity of cell death and of cell regeneration.

In the beginning of an attack of photophthalmia, iced applications are of some value. One of the more recent corneal anesthetics afford relief, but cocaine is contraindicated. An antiseptic agent to prevent infection of the eroded areas is of definite value. After twenty-four hours, heat hastens epithelial regeneration. There are no known therapeutic agents of curative value; but the condition is self limited, provided there is no intercurrent infection of the corneal surface. (See Duke-Elder, W. S.: *Textbook of Ophthalmology*, St. Louis, C. V. Mosby Company 1:818.)

PHLEBITIS AND CHILDBIRTH

To the Editor:—A patient who has a child nearly 4 years old now desires another. She tells me that she had a severe phlebitis following this birth and wishes to know the possibility of this occurring again. What should be advised?
M.D., Maine.

ANSWER.—Roughly speaking, an involvement of the veins of the lower extremities trebles the incidence of postoperative thrombosis and embolism after abdominal hysterectomy (Barker, N. W.; Nygaard, K. K.; Walters, Waltman, and Priestley, J. T.: *Proc. Staff Meet., Mayo Clin.* 16:33 [Jan. 15] 1941). As a collective review of 179,072 childbirths gave an incidence of 1.3 per cent of thrombosis (Nurnberger, L.: *Verhandl. d. deutsch. Gesellsch. f. Kreislaufforsch.*, p. 101, 1934), a previous thrombosis might approximately result by analogy in a 4 per cent incidence of thrombosis. The patient, then, is taking about the same chance as if she were undergoing an abdominal hysterectomy instead of a childbirth *per vias naturales*.

Cardiac disease, obesity, age above 40, prolonged labor, dehydration, anemia and infection are other predisposing factors. Elevation of the foot of the bed, snug bandaging of the limbs and cautious administration of heparin for seven to ten days after delivery will minimize the recurrence of phlebitis.

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SURGICAL ASPECTS OF ACUTE PANCREATITIS

WITH SPECIAL REFERENCE TO ITS FRE-
QUENCY AS REVEALED BY THE
SERUM AMYLASE TEST

ROBERT ELMAN, M.D.

ST. LOUIS

Acute pancreatitis is certainly a dramatic and interesting disease, yet it is often dismissed as unimportant by most physicians because they consider it as extremely rare and usually fatal. In direct contrast to this impression I expect to demonstrate that acute pancreatitis is far from rare and that in its common form it is rarely fatal but subsides spontaneously. The supposed rarity of acute pancreatitis is due to the fact that it is nearly always unrecognized because it mimics other well known acute conditions, both surgical and medical. In many instances the severe pain in the upper part of the abdomen, nausea and vomiting, local tenderness and muscle spasm all point to what is often called a surgical emergency. Indeed the indications for immediate laparotomy seem so clear that many patients with acute pancreatitis are operated on without any suspicion of the real cause of the trouble; the usual tentative diagnoses are perforated peptic ulcer, acute cholecystitis, intestinal strangulation or acute appendicitis. The diagnostic error is first apparent when the expected lesion is not found; however, if the surgeon is persistent and explores the abdomen, the true state of affairs will usually be revealed. Clear or brownish fluid may be seen coming from the lesser peritoneal cavity, and the pancreas, if it is palpated, will feel enlarged and firm, especially at the head of the gland. If the organ is exposed for inspection it will be found to be edematous, usually a little whiter than normal, and may exhibit tiny areas of fat necrosis over its surface. Occasionally, however, the color is darker, as if suffused with blood. Only in the severe type (called acute necrosis of the pancreas), which fortunately is rare, is there hemorrhagic fluid in the abdominal cavity as well as widespread fat necrosis. This experience with acute pancreatitis is common with most surgeons. As expressed by Finney¹ at the Union Memorial Hospital in Baltimore, where 21 patients with acute pancreatitis were operated on, "At most we have diagnosed 2 correctly from a clinical standpoint and I am not sure about them."

¹Max Ballin Lecture, delivered at the Institute of Art, Detroit, Nov. 26, 1941.

²From the Department of Surgery, Washington University School of Medicine, and Barnes and St. Louis City hospitals.

³I. Finney, G. G., in discussion of paper by Morton, J. J., Jr., and Widger, S. W.: *Ann. Surg.* 111:802 (May) 1940.

Acute pancreatitis occurs also without raising the question of an acute surgical emergency, because it may simulate purely medical diseases commonly seen by internists. In such cases the presumptive diagnosis is usually acute coronary disease, biliary colic or occasionally tabetic crisis. The fact that the attack subsides promptly often serves to remove the need for any further diagnostic procedures and lulls the physician into a false sense of security that the first impression was correct. It is true that if biliary colic is suspected the diagnosis of cholecystitis is often confirmed when subsequent studies show that the gallbladder is diseased and cholecystectomy advised. Unfortunately, the diagnostic error in many such cases confronts the physician only after cholecystectomy has been performed and the patient returns with recurrent attacks of similar nature occurring within a few weeks or months after operation. Now the surgeon may take the blame for the recurrent attacks, especially if stones were present in the gallbladder, by confessing to the possibility of having missed a stone in the common duct. He may even cheerfully offer to operate again and look for the stone. If he does not find a stone, a T tube is usually inserted in the common duct and the diagnosis in the file of the patient's history becomes "postcholecystectomy syndrome."

Up until a decade ago there was no reasonably certain way of making a clinical diagnosis of acute pancreatitis, and this is, of course, the reason it was seldom recognized and therefore considered rare. Indeed, our sole knowledge of acute disease of the pancreas was furnished by pathologists and to a lesser extent by surgeons. The best known type of acute pancreatitis, acute necrosis of the pancreas or acute hemorrhagic pancreatitis was summarized by Reginald Fitz² on the basis of autopsy findings in his classic papers published in 1889; he described and classified the various lesions which are included under these terms. Surgeons also encountered this lesion and soon recognized its severity and the high mortality that followed operation. However, the usually fatal type of disease which Fitz described was extremely rare and for this reason aroused little clinical interest. I shall have relatively little to say, therefore, of acute pancreatic necrosis, but more of the subsiding or transient type of acute (nonhemorrhagic) pancreatitis which is common and rarely fatal.

In 1927 I became interested in the pancreas and largely for diagnostic reasons studied in the serum the pancreatic ferment amylase by a viscosimetric method. My first patient who presented a high serum amylase (thirty times normal) was the mother of a colleague, who had an attack of severe abdominal pain and circulatory collapse, which ended fatally within twenty-four hours; at autopsy there was an intense

²Fitz, R. H.: *Acute Pancreatitis*, Boston & M. S. J. 120:81F, 205 and 229, 1889.

acute hemorrhagic pancreatitis. Other patients were encountered with a high serum amylase, three of whom were later shown to harbor pancreatic cysts, although the values were not as high.³ Soon afterward I operated on a patient with supposed biliary colic whose serum amylase was extremely high (twenty times normal). At operation I found gross evidence of acute pancreatitis, biopsy of the pancreas showed interstitial changes of acute inflammation. On consulting the literature I was able to find, without much difficulty, nearly 40 cases of acute nonhemorrhagic pancreatitis, nearly all encountered more or less accidentally by surgeons while operating on patients with acute disease of the abdomen, supposedly due to other lesions.⁴ The first reference I could find of acute pancreatitis without necrosis was to a patient operated on by Dr W S Halsted⁵ in 1890. The preoperative diagnosis was intestinal obstruction; nothing was done at operation and the patient recovered. In 1922 Zoepffel,⁶ a German surgeon, operated on 4 patients because of acute manifestations within the abdomen and found changes in the pancreas which were quite unexpected. Zoepffel called the lesion acute edematous pancreatitis because he observed the extreme edema surrounding the gland. All 4 of his patients recovered, although nothing specially was done at operation to the pancreas except to take a specimen for biopsy.

Armed with a simplified method⁷ of determining amylase and convinced of the frequency of nonhemorrhagic pancreatitis, I became suspicious of all patients entering the hospital for emergency treatment of acute pain in the upper part of the abdomen, blood was examined for its content of amylase in a series of such patients. Many of them showed high amylase values, at first I operated on these patients and found the changes in the pancreas already noted. It soon became apparent, however, that the attacks, dramatic as they seemed on entrance, rapidly subsided, and often in twelve hours the patient seemed entirely well in contrast to the dire situation the night before.

During the past ten years many more similar observations were made at the Barnes Hospital and St. Louis City Hospital, details of which may be found in several publications during this time.⁸ With the use of serum amylase determinations at Barnes Hospital, the number of diagnoses of acute pancreatitis has increased by several hundred per cent. At the St. Louis City Hospital 65 cases were recognized during the past five years, whereas before the use of the amylase test such a diagnosis appeared only a few times a year and then nearly always it was based on observations made at autopsy. Indeed, the incidence of acute pancreatitis was about half of that of perforated peptic ulcer and one tenth of that of acute appendicitis at the latter hospital. Similar observations have been made in other clinics. This situation is not surprising when one realizes that the

clinical picture of acute pancreatitis mimics so closely other acute conditions of the abdomen that often the diagnosis cannot be made without the aid of the blood amylase test. The following is a typical recent experience.

A salesman aged 31, unmarried, was admitted because of an emergency with the history that thirty hours before his entrance he was seized with sudden, constant epigastric pain with no radiation and that he had vomited on several occasions after onset of the pain. Previous to this seizure he had been relatively well, except that for the past five months he had suffered from similar but milder episodes of pain lasting several days, with complete freedom of symptoms between attacks. He received some relief by taking sodium bicarbonate and occasionally by consuming food. Several physicians who examined him stated that he had a duodenal ulcer. On admission the patient was severely prostrated but was not in shock and complained bitterly of pain in the midepigastrium. Although a roentgenographic examination did not show air under the diaphragm, the local signs (severe local tenderness and muscle spasm) were so characteristic of peritoneal irritation that it seemed certain that he had either an acute cholecystic obstruction or a perforated peptic ulcer. Because of the possibility of pancreatitis the amylase in the blood was determined. Nevertheless, the patient was prepared for operation, however, promptly after the administration of fluid there was almost a complete relief of pain. Moreover, the local conditions subsided so rapidly that operation was not carried out. This decision was made easy by the fact that the blood amylase examination was reported as 1,500, the normal being about 100. Several days later the blood amylase had returned to a normal value. In view of his past history a complete gastrointestinal series was done. No evidence of ulceration or other abnormality was found. The cholecystogram was of great interest and showed merely a faintly but very definitely visualized gallbladder. The patient was discharged from the hospital and on a dietary regimen has thus far remained well.

This experience is an instructive one because it emphasizes again the fact that it is easy to overlook the possibility of acute pancreatitis and illustrates, therefore, the ease with which such a diagnosis may be missed and an unnecessary operation carried out. It may be missed because the blood amylase test is really the only certain method of diagnosis. May I also emphasize that it is of value only during the acute manifestations. If we had waited a day or two before examining this patient's blood the value for the amylase would have been normal and we never would have known that he actually was suffering from pancreatitis unless, of course, we had operated and found the lesion. The curve of amylase is usually a characteristic one, high at the beginning of the attack but falling very rapidly to normal, as has been illustrated in many publications both from our clinic and elsewhere. Nevertheless, the question is often raised and I must emphasize again that in the typical case serum amylase measurements are of no value whatever unless carried out shortly after the patient's acute symptoms begin. This is particularly true, of course, when the attack is relatively mild in its severity, because in these instances the elevation of the serum amylase, though striking and pronounced, may be of only twelve to twenty-four hours' duration.

Is there actually any sound clinical basis for a bedside diagnosis of acute pancreatitis? I am afraid that I must answer this question in the negative. In spite of my own observations of a good many cases over many years, I believe that such a clinical diagnosis is often impossible. Indeed, one must consider such a diagnosis in every patient with acute pain in the upper part of the abdomen, even though he seems to be presenting the typical clinical picture of the following con-

3 Elman, Robert. Blood Amylase in Pancreatic Disease, *Proc Soc Exper Biol & Med* 25:173, 1927. Elman, Robert, Arneson, Norman, and Graham, F A. Value of Blood Amylase Estimations in the Diagnosis of Pancreatic Disease. A Clinical Study, *Arch Surg* 19:943 (Dec pt 1) 1929. Elman, Robert. Blood Amylase in Relation to Disease of the Pancreas. Further Observations, *Arch Int Med* 48:828 (Nov pt 1) 1931.
4 Elman, Robert. Acute Interstitial Pancreatitis, *Surg, Gynec & Obst* 57:291 (Sept) 1933.
5 Halsted W S. Retrojection of Bile as a Cause of Acute Hemorrhagic Pancreatitis, *Bull Johns Hopkins Hosp* 12:179, 1901.
6 Zoepffel H. Deutsche Ztschr f Chir 175:301, 1922.
7 Somogyi M. J Biol Chem 125:399 (Sept) 1938. Elman, Robert. S Clin North America 20:1247 (Oct) 1940.
8 Elman, Robert. Acute Inflammation of the Pancreas. A Cause of Epigastric Pain in Gallbladder Disease and of Recurrent Pain After Cholecystectomy, *Surg, Gynec & Obst* 61:670 (Nov) 1935. Variations of Blood Amylase During Acute Transient Disease of the Pancreas, *Ann Surg* 105:379 (March) 1937. Diagnosis and Treatment of Acute Nonhemorrhagic Pancreatitis, *Am J Digest Dis* 4:732 (Jan) 1939.

ditions: perforation of a peptic ulcer; acute intestinal obstruction; acute cholecystic obstruction or acute cholecystitis; coronary disease; biliary colic; acute appendicitis; tabetic crisis. Indeed, I may say that any patient with severe, pronounced abdominal pain, particularly when it is located in the epigastrium, should be suspected of having acute pancreatitis. If the blood is examined promptly in such cases, many cases of acute pancreatitis will be detected; certainly the test will enable one either to make such a diagnosis or to exclude it. Obviously, the last result is most frequent, and one is thus enabled to exclude the diagnosis of acute pancreatitis and consider other possibilities. On the other hand, a positive test will lead to a diagnosis of acute pancreatitis and thus exclude other lesions for which an immediate abdominal operation might have been carried out; this is especially important because a diagnosis of acute pancreatitis does not call for immediate operation.

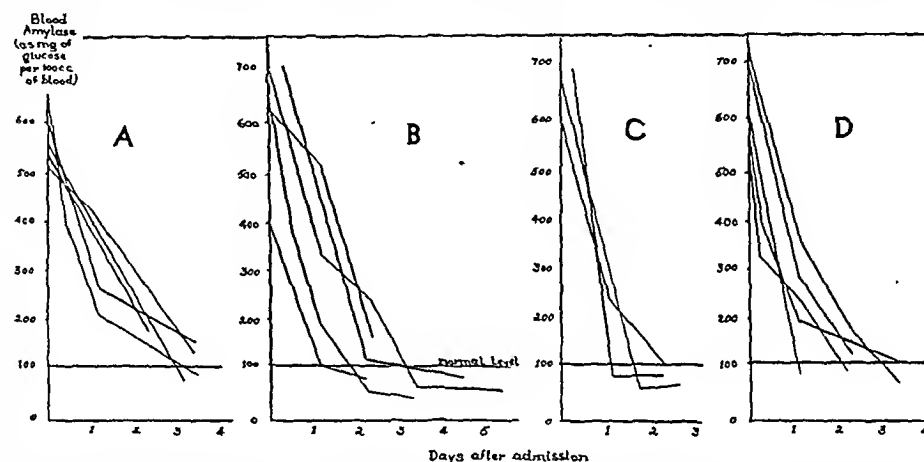
TREATMENT OF ACUTE PANCREATITIS

Once a diagnosis of acute pancreatitis is made at the time of the acute attack, the surgeon must then decide whether the patient is suffering from acute nonhemorrhagic pancreatitis or whether the lesion is a true necrosis of the pancreas. Since operation is not urgent, the patient can safely be observed. If the patient has acute nonhemorrhagic pancreatitis, the attack will subside promptly and further examinations can be carried out later. On the other hand, if the patient is suffering from a true necrosis of the pancreas, the attack will not subside and prolonged nonoperative therapy may end in a fatality. It is in the latter group of patients, fortunately very rare, on whom I believe operation should

be carried out at an appropriate time, because without operation the mortality approaches 100 per cent. It is difficult to state what this appropriate time will be, but certainly sufficient time must be allowed for adequate preparation of the patient, perhaps for at least several days. Only rarely is it possible for an acute necrotic process in the center of the abdominal cavity to be relieved spontaneously, usually by sloughing of the necrotic organ or drainage of an abscess into the lumen of the intestine or to the exterior. At operation the lesion must be attacked at its origin; the surgeon opens the lesser peritoneal sac and allows escape of infected and necrotic material to the outside by drainage of this cavity. Drainage of secondary abscesses, which usually develop by extension from the lesser peritoneal cavities, is usually insufficient. Cholecystostomy is also advisable in these patients in order to divert the flow of bile which seems to be a factor in the development of pancreatitis by reflux into the pancreatic duct. Many years ago I operated on several such patients who survived and are living today. I must confess that during the past few years, influenced largely by the popularity of the so-called conservative treatment of all types of pancreatitis, we have refrained from operating on these patients. As a result, I have seen 6 such patients during the past

five years at the autopsy table. Some of them, I am sure, might have been saved if they had been operated on, since they were in the hospital for several weeks before the fatal outcome. It is well to emphasize also that in patients with hemorrhagic as well as in those with nonhemorrhagic pancreatitis the blood amylase tends to fall after the initial rise. The fall in the former case, however, is not due to a subsidence of the process of inflammation but rather to a destruction of the gland which manufactures amylase. A fall in the level of blood amylase, therefore, must not be taken as an indication that the process is subsiding. This decision must be based on the clinical manifestations.

What is done when the attack of acute nonhemorrhagic pancreatitis has subsided and the patient after the course of a day or two or more feels perfectly well? It has been our policy to study these patients at leisure, usually by carrying out a complete gastrointestinal examination as well as a cholecystogram. If, as the result of such examinations, an operation is indicated (usually cholecystectomy), it is carried out. In many of these cases removal of a diseased gallbladder and stones will result in a complete relief of further



Characteristic serum amylase curves in four groups of patients with acute interstitial pancreatitis: A, with normal gallbladder; B, with pathologic gallbladder; C, following cholecystectomy; D, with condition of gallbladder unknown.

attacks. In certain cases cholecystectomy is followed by a recurrence of the attacks of pancreatitis. This experience has stimulated attempts on the part of surgeons to do something at the time of operation which might prevent these recurrences. Indeed, this problem also arises when a patient who has had a previous cholecystectomy returns with recurrent attacks of pain which for the first time are shown to be due to acute pancreatitis. The same problem is presented by the patient with repeated attacks of acute pancreatitis who shows no evidence of a surgical lesion for which an abdominal operation is indicated. The problem, though difficult, is usually hopeful because there seems to be a natural tendency for the attacks to disappear eventually. I wish to make several suggestions which I have found are useful. In the first place, glyceryl trinitrate, $\frac{1}{100}$ grain (0.0006 Gm.), placed under the tongue and repeated in a few minutes shortly after the onset of the attack will often result in dramatic abortion of the attack. This remedy, however, must be used promptly; if the attack has been present for a number of hours the drug usually fails. For this reason, the patient is asked to carry a number of these tablets to be taken as soon as the attack begins. The mere possession of these tablets, once they have effected relief of the pain, often gives the

individual a great deal of confidence, that the fear of attacks may thereby be overcome has perhaps in itself some therapeutic value. Other drugs have been recommended for the relief of pain during the attacks. However, most of them are apt to be disappointing. This is true of morphine as well as epinephrine and ephedrine.

The patient who has had several attacks of acute pancreatitis should also be placed on a regimen which has as its purpose the maintenance of a more or less constant flow of bile and the avoidance of any storage of bile for long periods of time in the gallbladder. This may be achieved by a regimen of small frequent feedings and the avoidance of any large meals with necessarily long periods afterward when no food is ingested. In this way many patients may enjoy long remissions.

In the really refractory cases of acute pancreatitis, particularly those in which a previous cholecystectomy has been performed, the problem is more difficult. Many of these patients have had various procedures performed, such as a T tube drainage of the common duct, in an attempt to prevent such attacks. Dilation of the sphincter of Oddi has been advised and performed. Cutting of the sphincter has also been carried out. These last two procedures are based on the theory that pancreatitis is due to a sphincter spasm which converts the biliary and pancreatic ducts into a common channel and that bile acts as an irritant when it enters the pancreas. If this is indeed true, a more obvious solution would be the transplantation of the common duct to another site in the duodenum. I have never heard of this procedure being done and have never done it myself. Perhaps it should be done in refractory cases of acute pancreatitis which do not respond to other therapy.

There are other types of pancreatitis which have surgical interest and can be detected and the course of the disease followed by measuring the blood amylase. These conditions are much less common than the clear-cut instances of acute nonhemorrhagic pancreatitis thus far discussed. For example, patients have been studied with evidence of subacute pancreatitis which follow an atypical course. In other patients a peptic ulcer may slowly perforate into the pancreas and produce an inflammatory reaction reflected in elevations of the blood amylase. Such cases require further study, I have seen very few of them. There is a suggestion which I should like to make, however, in regard to the early diagnosis of carcinoma of the head of the pancreas. Having observed several jaundiced patients with increased blood amylase values who subsequently were shown to have carcinoma, I suggest the more frequent use of this test early in the course of unexplained jaundice. If the tumor obstructs the pancreatic duct, the rise in blood amylase will be prompt, however, with complete obstruction a return to normal occurs within a few weeks. Indeed, in nearly all late cases of carcinoma of the head of the pancreas that I have studied the blood amylase was normal or below normal.

SUMMARY

Physicians are urged always to consider the pancreas as a cause of severe pain in the upper part of the abdomen. The frequency of acute pancreatitis is not generally realized because this disease so mimics other acute conditions that a clinical diagnosis can seldom be made without the serum amylase test, which reveals a high value soon after the onset of the attack. The clinical manifestations of acute pancreatitis are usually those of an acute surgical condition within the

abdomen such as perforated peptic ulcer, acute intestinal obstruction, acute cholecystitis and acute appendicitis, so that often emergency operations are needlessly performed. In other instances acute pancreatitis may be regarded as a coronary attack or biliary colic and is a cause of the "postcholecystectomy" syndrome. Treatment is conservative at the outset of the attack, if the manifestations subside promptly, as they usually do. A subsequent study may reveal the need for operation, usually cholecystectomy, if the manifestations do not subside, necrosis of the pancreas (a rare event) is suspected and operation planned for drainage of the lesser peritoneal cavity. The treatment and prevention of the individual attacks of acute nonhemorrhagic pancreatitis thus far is purely medical.

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THE USE OF SULFAGUANIDINE IN THE TREATMENT OF DYSENTERY CARRIERS

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AND

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A chemical for the treatment of infections, such as bacillary dysentery, which are limited to the gastrointestinal tract should have certain properties. It must dissolve in the bowel content in a concentration adequate to inhibit the multiplication of, or to kill, pathogenic organisms and must be harmless to the human or animal host. No intestinal antiseptic has, in the past, fulfilled these requirements. The use of the sulfonamide drugs has become firmly established in the treatment of various infections but the rapid and complete absorption of these chemicals from the gastrointestinal tract has made them valueless in the therapy of local enteric infections. The report by Marshall Bratton White and Litchfield,¹ describing the properties of sulfaguanidine, the analogue of sulfathiazole and sulfapyridine, was received, therefore, with great interest. This drug was found to be soluble in water in amounts sufficient to cause adequate bacteriostasis of intestinal pathogens but was poorly absorbed from the bowel so that a high concentration in the intestinal content and a low concentration in the blood and tissues was readily attained. Animal experiments suggested that the number of coliform bacteria in the feces of mice, dogs and monkeys² could be reduced by the administration of sulfaguanidine.

In vitro experiments³ have demonstrated that this chemical strikingly inhibits the growth of strains of Flexner, Sonne and Shiga varieties of dysentery bacilli and also of *Salmonella cholerae suis* and *Salmonella paratyphi A* but is ineffective against other organisms in the *Salmonella* group.

It has been suggested that the apparent failure of absorption of sulfaguanidine might be due to a removal of the drug from the blood stream by the liver and a return of the material to the gastrointestinal tract.

From the Department of Medicine, Stanford University School of Medicine.
1. Marshall Bratton White, H. J., and Litchfield, J. T., "A Chemotherapeutic Agent for Intestinal Infection," *Proc. Soc. Exper. Biol. & Med.* 67: 163 (Sept.) 1940.
2. Corwin, W. C., "Studies on the Chronic Toxicity of Sulfaguanidine," *Bull. Johns Hopkins Hosp.* 69: 39 (Aug.) 1941.
3. Bornstein, Siegfried, and Straus, I., "Selective Action of Sulfaguanidine on Different *Salmonella* Types and Its Practical Importance," *Proc. Soc. Exper. Biol. & Med.* 17: 112 (Mar.) 1941.

in the bile. Hubbard and his associates⁴ have recently studied this possibility and have shown that the concentration of the drug in the bile was sufficiently low to exclude the possibility of any important degree of reexcretion into the intestine.

This experimental evidence logically suggested a trial of sulfaguanidine in acute bacillary dysentery. A group of 17 children were treated by Marshall, Bratton, Edwards and Walker,⁵ who felt that the results obtained were satisfactory, especially if chemotherapy was begun before the third day of the disease. The drug was found to be very poorly absorbed from the gastrointestinal tract, as had been anticipated from the previous animal experiments. The use of sulfaguanidine in the treatment of bacillary dysentery has also been described by Lyon,⁶ who studied two groups of 23 patients, one of which was treated with this drug. Bacteriologic diagnosis was made in only one third of the cases. Clinical improvement occurred in 18 of the treated cases within forty-eight hours, and recovery was well established in a few days. Fever continued, in the control group, for two weeks in association with bloody purulent diarrhea and loss of weight and strength.

The course of chronic bacillary dysentery in 2 babies was not altered by the exhibition of sulfaguanidine,⁵ and no other trials of the use of this agent in the treatment of chronic cases of this disease, or of healthy carriers of dysentery bacilli, appear to have been reported. The presence of typhoid bacilli in the gall-bladders of carriers of this organism may cause local chemotherapy to be ineffective in the control of this condition. Eradication of these bacteria from the stools of 1 patient following the administration of sulfaguanidine has been described.⁷

In the treatment of acute bacillary dysentery, sulfaguanidine has usually been administered in an initial oral dose of 0.1 Gm. per kilogram of body weight, to be followed by 0.3 Gm. per kilogram in divided doses every twenty-four hours until clinical improvement has occurred. The dose is then halved and continued for at least three days.

The toxic manifestations that may be observed in association with the use of sulfaguanidine are similar to those encountered with the other sulfonamides. Fever, skin rash, conjunctivitis, anemia and crystalluria have been described but have not been severe in any case.⁸ No signs of toxicity or postmortem evidence of tissue damage were observed in monkeys treated with large doses for one month.⁵

PRESENT STUDY

Dysentery bacilli were isolated from the stools of 10 employees of a San Francisco hospital during a recent survey. These persons and one other man were selected for treatment with sulfaguanidine in an attempt to eliminate dysentery bacilli from their stools.

The accompanying table summarizes the data pertinent to the study and treatment of these patients. All of the isolated organisms were nonmotile and fermented mannite and xylose. Only one failed to attack dulcitol. Agglutination tests were performed and the

results are shown in the table. Most of the strains were agglutinated by antisera for *Shigella alkalescens* and the Flexner X and V varieties.

These are, in general, the characteristics of *Sh. alkalescens*.⁹ The pathogenicity of this variety of dysentery bacillus in man has only recently been established in spite of its close antigenic and cultural relationship to the usual Flexner types. The failure of many laboratories to perform adequate differential tests accounts, in part, for the slow recognition of the bacillus. In this clinic *Sh. alkalescens* has been isolated from examples of acute and chronic dysentery and is more frequently recovered than any other variety of dysentery bacillus.

Observations and Treatment in Eleven Cases

Pn. Patient	Organism Type and Highest Titer	Reactions to Chemotherapy	Stool Cultures					
			Sulfaguanidine	Blood Level	Num-ber	Day of	Num-ber	Num-ber
			Total Dose in Gm.	Mg. per 100 Cc.	Posi-tive Before Treat-ment	Treat-ment First Negative	of Days Negative	Negative
1	V-1/610 Z-1/20 Alk.-0	Headache Nausea Cramps	16	0.2	1	3	110	11
2	X-1/2,560 V-1/610 Alk.-1/480	None	60	2.8	2	5	60	8
3	X-1/640 V-1/160 Alk.-1/960	Nausea Vomiting	48	2.5	3	4	70	5
4	X-1/1,280 V-1/610 Alk.-1/480	None	75	0.5	3	4	100	11
5	X-1/640 V-1/610 Alk.-1/960	Headache	48	1.5	2	3	95	8
6	V-1/1,280 Alk.-1/960	Headache	72	2.9	2	2	40	5
7	X-1/1,280 V-1/610 Alk.-1/960	Headache	48	1.1	2	4	80	8
8	X-1/160 Alk.-1/960	None	48	1.5	2	4	30	6
9	X-1/5,120 V-1/1,280 Alk.-1/240	None	48	1.6	4	4	30	6
10	X-1/160 V-1/20 W-1/80	None	48 60 117	3.2 2.6 ...	2	Never 4 4	0 0 0	0 0 0
11	X-1/610 V-1/160 Alk.-1/60	None	72 84 96	5.0 2.1 5.0	15	Never 4 4	0 0 0	0 0 0

About half the patients had had mild gastrointestinal symptoms before treatment. These were rather non-specific in character, chiefly abdominal cramps and diarrhea. Patient 5 had had several loose bowel movements daily for more than a year. A course of atabrine was administered for the purpose of eliminating an infection with *Giardia lamblia*, but he continued to have four or five stools a day, from which many dysentery bacilli could be isolated before treatment was begun. Each patient received 12 Gm. of sulfaguanidine^{9a} daily for from two to six days. The total amounts varied from 16 to 84 Gm., the average being about 50 Gm. The drug was discontinued voluntarily on the second day, because of nausea and vomiting, by 1 patient. All the others completed the course prescribed.

Stool specimens were collected in each case on every second or third day during the first ten days of observation after treatment was begun and then at

4. Hubbard, R. S.; Butsch, W. L., and Aaron, A. H.: Excretion of Sulfaguanidine in Material Drained from the Human Biliary Tract, *Proc. Soc. Exper. Biol. & Med.* 47: 132 (May) 1941.

5. Marshall, E. K., Jr.; Bratton, A. C.; Edwards, Lydia B., and Walker, Ethel: Sulfaguanidine in the Treatment of Acute Bacillary Dysentery in Children, *Bull. Johns Hopkins Hosp.* 68: 94 (Jan.) 1941.

6. Lyon, G. M.: Chemotherapy in Acute Bacillary Dysentery, *West Virginia M. J.* 37: 54 (Feb.) 1941.

7. Levi, J. E., and Willen, Abner: The Typhoid Carrier State Treated with Sulfaguanidine, *J. A. M. A.* 116: 2258 (May 17) 1941.

8. Marshall, Bratton, Edwards and Walker.⁵ Lyon.⁶

9. Felsen, Joseph, and Wolarsky, William: Bacillary Dysentery Due to *Bacillus Alkalescens*, *New York State J. Med.* 40: 1303 (Sept. 1) 1940. Branton, Mary, and Elderling, Grace: Cultures of the Dysentery Group Isolated in Western Michigan, *J. Infect. Dis.* 68: 113 (March-April) 1941.

9a. Supplied by the Lederle Laboratories, Pearl River, N. Y.

approximately weekly intervals. Sulfaguanidine was demonstrated in the stools by qualitative tests for four to five days after the cessation of treatment. Cultures were made of every stool. The amount of sulfaguanidine in the blood of each patient was determined on the third or fourth day of treatment by the method of Bratton and Marshall.¹⁰

RESULTS

Dysentery bacilli disappeared from the stools of 9 of the treated patients during the period of sulfaguanidine administration. Repeated culture of the stools of these persons over an interval of from one to three months has failed to disclose pathogenic organisms on any occasion. In the other 2 cases, treatment was undertaken on three occasions, with progressively larger amounts being given. After the second and third courses of chemotherapy the dysentery bacilli disappeared from the stools of these patients, only to return shortly after the withdrawal of the drug. Patient 5 had symptoms which appeared to be due to chronic infection with dysentery bacilli. Since treatment, his diarrhea has disappeared, his appetite has improved and he has gained weight.

Certain of the treated patients have stated that symptoms referable to the gastrointestinal tract were less severe following treatment with sulfaguanidine. The nature of these complaints is such that evaluation of this observation is impossible.

Few toxic manifestations were noted. Nausea and vomiting occurred in case 1 after 16 Gm. and in case 3 after 48 Gm. of the drug had been administered, but these symptoms were neither severe nor prolonged. Five subjects had slight to moderately severe headaches, lasting twenty-four to forty-eight hours. No drug fevers, rashes, hematuria, oliguria or anemias developed. In general, the subjects were all able to remain ambulatory and to work throughout the treatment.

The amount of sulfaguanidine in the blood was consistently small. The variation was from 0.5 to 5 mg., with an average of 2.22 mg. per hundred cubic centimeters of blood. Sulfaguanidine could be detected in the stools for about five days after treatment was discontinued.

COMMENT

Little is known of the incidence of healthy dysentery carriers among civil groups. It is becoming apparent, however, that bacillary dysentery is an important problem in the United States. Felsen¹¹ has pointed out that this disease was reported sixteen times as frequently in 1937 as in 1933. Inexpensive transportation, leading to a shifting population, and congestion in urban areas may be partially responsible for this increase.

It is often difficult to distinguish clinically between healthy carriers and patients with mild chronic bacillary dysentery, since functional complaints of the former may be identical with the symptoms of organic disease of the latter. Felsen,¹² in a follow-up after the Jersey City epidemic of acute bacillary dysentery in 1934, found that 10 per cent of the patients had persistent complaints varying from mild diarrhea and abdominal cramps to severe forms of regional ileitis and ulcerative colitis. About half of the patients treated with sulfa-

guanidine during the present study had had mild symptoms referable to the gastrointestinal tract, and some felt that they were benefited by treatment. All but 1 should probably be regarded as healthy carriers.

In general, the results of treatment of this group of dysentery carriers with sulfaguanidine have been very encouraging. The stool cultures of 9 of the 11 patients became negative during treatment and have remained so for periods varying from thirty to ninety days. The reason for the failure in the other 2 is not clear. It may be significant that the organisms isolated were serologically different from most of the other strains.

The daily amount of sulfaguanidine administered was smaller and the duration of treatment was shorter than that suggested for acute dysentery, but effective concentrations in the intestine were attained in most instances. A few toxic reactions occurred, but the patients were all able to remain at work while taking the drug.

Dysentery bacilli may not always be so easily eradicated from the stools by the action of chemotherapeutic agents. The organisms isolated from the patients included in this study were closely related biochemically and serologically and were somewhat different from the typical Flexner varieties. They may have been unusually sensitive to the action of sulfaguanidine.

Insufficient clinical and experimental data are available to determine accurately the value of sulfaguanidine in acute bacillary dysentery. Administration of the drug early in the disease appears to have a favorable influence on the course of the infection. That this chemical exerts a profound bactericidal effect on some bacilli of the dysentery group is indicated by the rapid and permanent elimination of these organisms from stools of the carriers described in this study. A similar action should occur to some degree in cases of acute infection with resulting cure or amelioration of the disease. The observations reported in this paper, therefore, provide additional evidence that sulfaguanidine is an effective agent to be used in the treatment of acute and chronic bacillary dysentery.

The healthy carrier of dysentery bacilli is probably the source of most cases of sporadic infection.¹³ In closed groups, such as hospitals, prisons and army camps, such persons at work in the kitchen are frequently responsible for the outbreak of serious epidemics. One of the most difficult problems arising in the control of such epidemics has been the absence of any satisfactory method for rendering the discovered carriers noninfectious. If the satisfactory results obtained in the treatment of carriers reported in this study are extended and confirmed, sulfaguanidine will become a valuable adjunct to the control of the spread of bacillary dysentery both in civil life and in the armed forces.

SUMMARY AND CONCLUSIONS

1. Eleven patients, from whose stools dysentery bacilli have been repeatedly isolated, have been treated with sulfaguanidine. About half had mild gastrointestinal complaints, but, with one exception, they are all regarded as healthy carriers.

2. In 9 of the 11 cases, dysentery bacilli disappeared from the stools during treatment and have not returned over periods varying from thirty to ninety days. This result was not obtained in 2 instances after three courses of treatment.

10. Bratton, A. C., and Marshall, E. K., Jr.: A New Coupling Component for Sulfanilamide Determination, *J. Biol. Chem.* **128**: 537 (May) 1939.

11. Felsen, Joseph: The Problem of Bacillary Dysentery, *Am. J. Trop. Med.* **19**: 333 (July) 1939.

12. Felsen, Joseph, and Gorenberg, Harold: Chronic Dysentery, Distal Ileitis and Ulcerative Colitis, *Am. J. M. Sc.* **102**: 553 (Oct.) 1936.

13. Zinsser, Hans, and Bayne-Jones, Stanhope: *Textbook of Bacteriology*, New York, D. Appleton-Century Company, 1929, p. 545.

3. All patients remained ambulatory and continued work while being treated. Few toxic manifestations were noted.

4. These favorable results suggest that further clinical trials are indicated both in healthy carriers and in cases of chronic bacillary dysentery.

5. This drug, which is adapted for use in ambulatory patients, may become a valuable adjunct to the control of the spread of bacillary dysentery, both in civil life and among the armed forces.

CONTROL OF CROSS INFECTIONS OF THE RESPIRATORY TRACT

IN A NURSERY FOR YOUNG INFANTS: A PRELIMINARY REPORT

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AND

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The adoption of the Dick aseptic nursery technic¹ at The Cradle in 1929 practically eliminated hand borne cross infections, such as enteritis and impetigo. Figure 1 illustrates the effect of this technic on the number of deaths due to enteritis contracted after admission. During the six years prior to the introduction of this aseptic technic (1923 to 1928) a total of 942 infants was admitted. There were 55 deaths, 53 due to enteritis. In 40 of the fatal cases infection was contracted after admission. During the twelve years since the introduction of the aseptic technic 3,132 infants have been admitted. There were 26 deaths, 6 due to enteritis. In no case was infection contracted after admission. The total mortality rate before the introduction of the aseptic technic was 5.8 per cent and after its introduction 0.8 per cent.

There remained, however, the problem of the respiratory cross infections. Nine infants died from infections of the respiratory tract after the introduction of the aseptic technic. Seven of them contracted the infection after admission. Figure 2 demonstrates the incidence of cross infection of the respiratory tract in infants during the last two years in the old building. Although there were seasonal differences, some infections were present at all times of the year. Thus in 1938 there occurred a midsummer infection of the respiratory tract involving all but 1 infant of a twelve crib unit and six attendants.² The epidemic was introduced by an infant admitted with a cold. In 1 of the cases of secondary infection fatal bronchopneumonia developed.

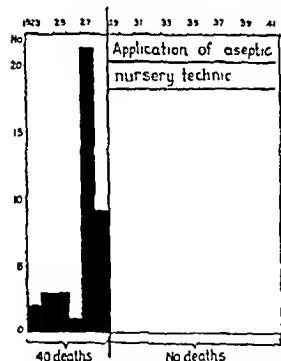


Fig. 1.—Cases of fatal enteritis contracted after admission before and after introduction of aseptic nursery technic.

A new building was erected in 1939 to investigate newer principles in the control of air borne infections: air conditioning, germicidal lights and mechanical barriers. This building was divided into three units of twelve cubicles each.

The cubicles in the control unit are separated from one another by complete partitions but are open at the front. Each cubicle is air conditioned with 100 per cent outside air. The air, at a temperature of 75 F. and a relative humidity of 40 per cent, enters near the ceiling and leaves near the floor. There is a complete change of air every six minutes. Thermostats are placed to maintain a constant temperature throughout the unit.

The only principle applied in this unit to prevent air borne infections is that of air conditioning.

The light unit (fig. 3) was designed by William F. Wells,³ who had made important contributions on light as a bactericidal agent. This unit is air conditioned like the control unit; in addition, germicidal lights^{3a} are placed above the open end of each cubicle so that a vertical curtain of light is thrown across each entrance. Six of these cubicles are separated by partitions from ceiling to floor; in the other six cubicles light curtains replace alternate solid partitions. Ventilation tests of the bactericidal tightness of the light curtains showed that about 99 per cent of the test organisms were killed as they passed through the light barrier. The light curtains are designed so that only a harmless fraction of the rays reaches the corner of the cubicle where the head of the infant is exposed. The nurses' eyes are protected by head shields and goggles. The spectrum band of this light differs from the customary ultraviolet in that approximately 90 per cent of its rays are of 2,537 angstrom units. Favorable results with the application of germicidal lights in infants' and children's wards and schoolrooms have been reported by McKhann, Steeger and Long; del Mundo and McKhann; Wells, Stokes, Wells and Wilder; Barenberg, Greene and Greenspan, and Greene, Barenberg and Greenberg.⁴

The barrier unit (fig. 4) was designed by James A. Reyniers,⁵ who had made important contributions to the

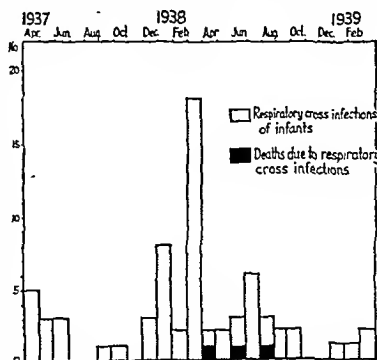


Fig. 2.—Cross infections of respiratory tract in infants during last two years in old building: 68 cases, 3 deaths.

1. Dick, G. F.; Dick, Gladys H., and Williams, J. L.: Etiology of Epidemic of Enteritis Associated with Mastoiditis in Infants, *Am. J. Dis. Child.* 35:955 (June) 1928. Aseptic Nursery Technic as Used at The Cradle, ed. 2, Evanston, The Cradle Society, 1941.

2. Sauer, L. W., and McDonald, J. J.: A Midsummer Respiratory Infection in an Aseptically Conducted Adoption Nursery, *J. Pediat.* 14: 304 (March) 1939.

3. Wells, W. F., and Wells, Mildred W.: Air-Borne Infection, *J. A. M. A.* 107: 1698 (Nov. 21) 1936; Air-Borne Infection: Sanitary Control, *ibid.* 107: 1895 (Nov. 28), 1936; Measurements of Sanitary Ventilation, *Am. J. Pub. Health* 28:343 (March) 1938. Wells, W. F.; Wells, Mildred W., and Nudd, Stuart: Infection of Air: Bacteriologic and Epidemiologic Factors, *ibid.* 29:863 (Aug.) 1939.

3a. The germicidal lamps were supplied by the General Electric Company.

4. McKhann, C. F.; Steeger, Adelbert, and Long, A. P.: Hospital Infections, *Am. J. Dis. Child.* 55:579 (March) 1938. del Mundo, F., and McKhann, C. F.: Effect of Ultraviolet Irradiation of Air on Incidence of Infections in an Infants' Hospital, *ibid.* 61:213 (Feb.) 1941. Wells, W. F.; Stokes, Joseph; Wells, Mildred W., and Wilder, T. S.: Experiments in the Environmental Control of Epidemic Respiratory Infection, *Tr. & Stud. Coll. Physicians, Philadelphia* 7:342 (Feb.) 1940. Barenberg, L. H.; Greene, David, and Greenspan, Leon: Effect of Irradiation of the Air in a Ward on the Incidence of Infections of the Respiratory Tract, *Am. J. Dis. Child.* 59:1219 (June) 1940. Greene, David; Barenberg, L. H., and Greenberg, Bernard: Effect of Irradiation of the Air in a Ward on the Incidence of Infections of the Respiratory Tract with a Note on Varicella, *ibid.* 61:273 (Feb.) 1941.

5. Reyniers, J. A.: The Use of Mechanical Barriers in Preventing Cross Infections Among Hospitalized Infant Populations, University of Notre Dame Symposium on Germ Free and Microsurgical Technic, to be published.

control of air borne cross infections with the aid of air conditioning and mechanical barriers. This unit contains twelve completely closed cubicles, each provided with individual air conditioning. A tightly fitting swinging door separates each cubicle from the corridor

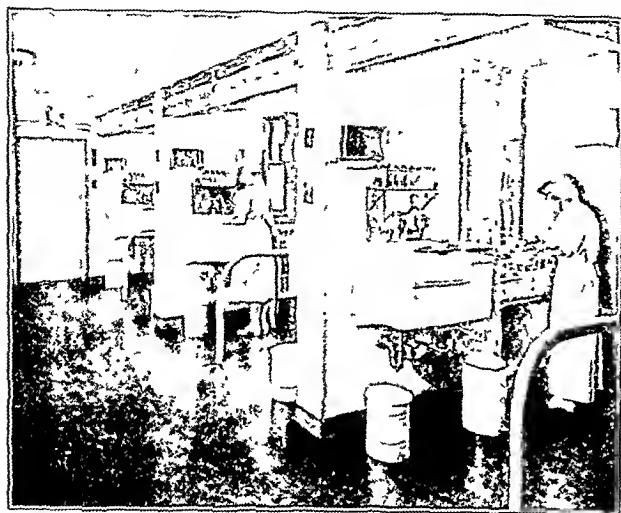


Fig 3—Light unit, there are germicidal light barriers at each cubicle entrance and between alternate cubicles

of the unit. Six cubicles are each subdivided by a sliding glass partition into an inner or infant's section and an outer or nurse's section. Each section has its own air intake and exhaust. The nurse enters the



Fig 4—Barrier unit, the partition between nurse's and infant's sections is partly raised.

outer section, prepares there for the care of the infant, raises the sliding glass partition not higher than to her shoulder level, attends the infant and then lowers the partition. A greater air pressure is maintained in the infant's section, so that the flow of air is toward

the nurse's section whenever the partition is raised. The remaining six cubicles are not subdivided.

Clinical observations and bacteriologic investigations were conducted to determine which of the three units was most efficient in controlling the spread of air borne infections.

CLINICAL OBSERVATIONS

The clinical observations were limited to infants in the first three months of life and included only the infections of the respiratory tract, such as the common cold. Therefore, the conclusions could not be applied to older children or to other types of air borne infections, such as chickenpox. Despite these limitations, several distinct advantages offered a unique opportunity for a clinicoepidemiologic study:

1. The three units were completely separated and usually had their own staff of nurses. The number of attendants was about the same in all the units.

2. Except for the special principles under investigation, the conditions in the three units were identical—conditioned air with the same temperature and humidity, equipment, individual aseptic technic and sterile food.

3. The same number of infants of approximately the same age and the same number of premature infants were admitted to all units. The stay was about the same.

4. About the same number of infants and nurses with acute infections of the respiratory tract were admitted to the units.

5. There were no visitors.

6. As hand borne cross infections were practically eliminated at The Cradle, cross infec-

tions of the respiratory tract from infant to infant were considered air borne.

For clinicoepidemiologic information the following routine records were kept: an individual record of each infant, an individual record of each sick nurse and a daily report of the unit. Thus a complete retrospective epidemiologic picture of each unit was maintained.

The number of cross infections of the respiratory tract in infants during the two years before the new nursery was constructed was compared with that for the two years in the new building. There were 68 such infections during the former period and 17 during the latter. The number per hundred infants admitted decreased from 14.5 to 4.6.

The distribution of the 17 cross infections in the three units was striking: 15 in the control unit, 1 in the light unit and 1 in the barrier unit (fig. 5). This distribution was all the more significant because the number of primary infections of the respiratory tract (in nurses on duty and in infants admitted with colds) was about the same in the three units, as shown in the accompanying table.

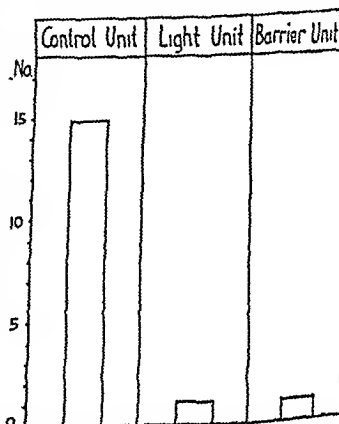


Fig 5—Distribution of cross infections of respiratory tract in infants in the three units of new building (April 1, 1939 to April 5, 1941): 15 in control unit, 1 in light unit and 1 in barrier unit.

5a Since April 6, 1941, six additional cross infections of infants have occurred in the control unit, none in the two other units.

Ten of the 15 cross infections of the respiratory tract in infants in the control unit occurred during a seasonal outbreak between Feb. 11 and April 5, 1941 (fig. 6). This infection in nurses as well as in infants was characterized by an almost afebrile course, profuse nasal discharge, frequent sneezing, spasmodic cough and, in some infants, pronounced wheezing of several days' duration with sonorous and sibilant rales, mostly during expiration. The spasmodic cough in the first infant was so severe as to lead to the suspicion of pertussis, but laboratory tests including examination of a cough plate did not show *Hemophilus pertussis* or *Hemophilus influenzae*. During this epidemic three infected nurses were on duty in the control unit, six in the light unit and three in the barrier unit. One infant was admitted to the barrier unit with an infection of the respiratory tract. Ten cross infections occurred in the infants in the control unit but none in either the light or the barrier unit. Apparently conditions in the control unit (air conditioning) did not prevent the spread of this respiratory infection, whereas those in the light unit (air conditioning and germicidal light) and in the barrier unit (air conditioning and mechanical barriers) were efficient.

The detailed data compiled during this epidemic shed light on certain epidemiologic questions, such as the

*Distribution of Primary Infections of Respiratory Tract in
Three Units of New Building (April 1, 1939
to April 5, 1941)*

	Control Unit	Light Unit	Barrier Unit
Primary infections of respiratory tract in nurses on duty.....	24	27	28
Primary infections of respiratory tract in infants.....	3	1	7
Totals.....	27	28	35

spread and the source of the infection. Figure 6 shows that the spread of the infection was not irregular throughout the unit. At first the infants in about half of the unit showed signs of the infection (infants 1 to 5); then the infection spread to the rest of the unit. Infant 8 was admitted to the cubicle after infant 3 had left. It seemed as if a certain density of the infective agent was necessary to produce the disease and that this density occurred only in the vicinity of the infected infant (see bacteriologic investigations, figure 8).

Detailed data on the source of the infection showed that the infection was introduced into the control unit between February 24 and March 2 by one or two nurses who remained on duty with infections of the respiratory tract (fig. 7). No nurse or infant in this unit had had a cold for three weeks. On March 5 an infant showed the first signs of infection. There followed a period, March 10 to March 17, during which it was impossible to determine whether the transmission occurred from nurse to infant or from infant to infant, because during this period one nurse and 2 infants with infection were in the unit. Although no nurse with symptoms of infection of the respiratory tract was on duty after March 11, the infection continued to spread from March 18 to April 5 until 7 more infants were involved. As several of these infants were severely ill, they were removed from the unit as indicated in figure 7, which shows the duration of stay in the unit. This

period of eighteen days demonstrated clearly that the infection spread from infant to infant. The role of carriers among the nurses was not borne out by our experience at The Cradle, which was that infection of the respiratory tract did not occur in an infant unless

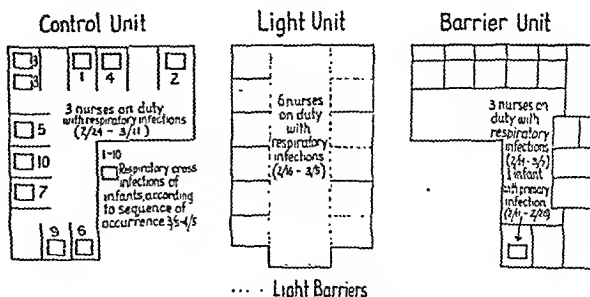


Fig. 6.—Epidemic of infections of respiratory tract (February 11 to April 5, 1941). Chart shows 3 cases of primary and 10 of secondary (cross) infection in the control unit; 6 of primary and 0 of secondary infection in the light unit, and 4 of primary and 0 of secondary infection in the barrier unit.

there was a primary infection in an infant or a nurse. It may be mentioned here that cultures of material from the nose and throat in nurses and infants showed the presence of *Streptococcus hemolyticus* only in the throats of two nurses, one of whom had had repeated colds.

During the two years in the new building there were ninety primary infections of the respiratory tract, seventy-nine among nurses and eleven among infants. In only 5 instances was it evident that a nurse had infected an infant; in 9 instances the transmission occurred from infant to infant; in 3 instances the source of infection could not be determined. As the nurses come in close contact with the infants, it is striking that transmission from nurse to infant was so infrequent. The filtering mask worn by the nurses usually protects the infant.⁶ Recent photographs by Jennison⁷ showed that this mask filtered out droplets.

BACTERIOLOGIC INVESTIGATIONS⁸

Although clinical observations were decisive, bacteriologic tests supplied valuable corroboratory evidence. One of the methods used was to spray a suspension of *Bacillus prodigiosus* in each unit and by means of exposed Petri dishes of culture medium to determine the

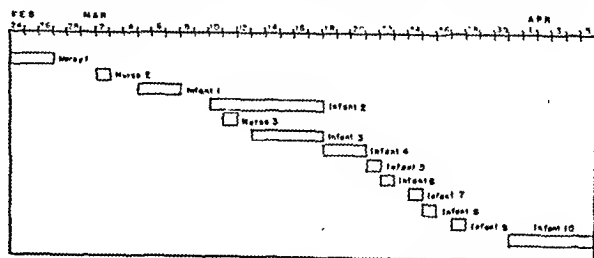


Fig. 7.—Sequence of cases in control unit during epidemic showing the duration of stay of infected nurses and infants in the unit. The infection was introduced by nurses and spread from infant to infant during the last period (March 18 to April 5).

extent of its penetration and survival. This harmless organism was chosen because it lent itself readily to unmistakable identification. It was used in 1926 by

6. McKhann, C. E.; Steeger, A., and Long, A. D.: Hospital Infections, Illinois Health Messenger 10: 38 (March) 1938.

7. Personal communication to the authors.

8. In collaboration with E. Kammerling, B.S., Department of Health, City of Chicago.

Dzialoszinski and Finkelstein.⁹ To simulate the various sites of possible source of infection, the suspension was sprayed in a cubicle in one series of experiments and in the unit corridor in another series. In each experiment plates were exposed throughout the unit. After

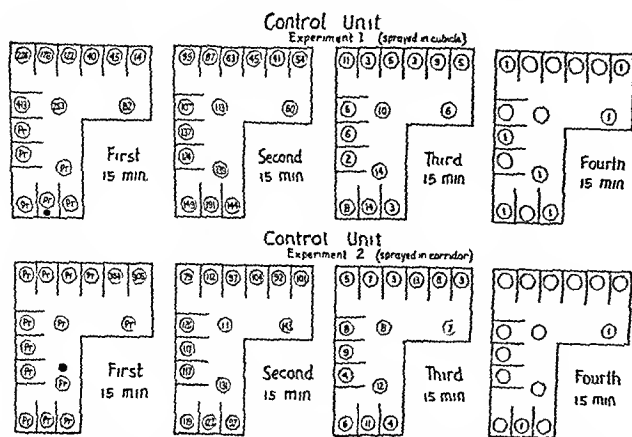


Fig. 8.—Penetration and survival of *B. prodigiosus* in control unit. In experiment 1 a suspension of the organism was sprayed in a cubicle and in experiment 2 in the corridor. The illustration shows penetration into all parts of the unit and the presence of some organisms after forty five minutes. Black dots, site of spraying, numbers in circles, plates exposed and numbers of colonies, Pr, profuse growth.

an incubation period of forty-eight hours at room temperature the number of colonies was counted.

Figure 8 illustrates the findings in two typical experiments in the control unit. In experiment 1 *B. prodigiosus* was sprayed in a cubicle; in experiment 2 it was sprayed in the unit corridor. Plates were exposed for four consecutive fifteen minute periods. In each experiment the colony count demonstrated complete penetration into all parts of the unit. Some organisms were still present forty-five minutes after the spraying. The number of bacteria decreased with the distance from the site of spray.

Similar experiments were conducted in the light unit (fig. 9). It was found that practically no penetration occurred from unit corridor to cubicle or from cubicle to unit corridor. The survival time was limited to the first fifteen minutes, i. e., *B. prodigiosus* was not found on any plate in the unit fifteen minutes after the spraying. These experiments were performed with newly installed lights. Lights in constant use for about four months showed some diminution in germicidal

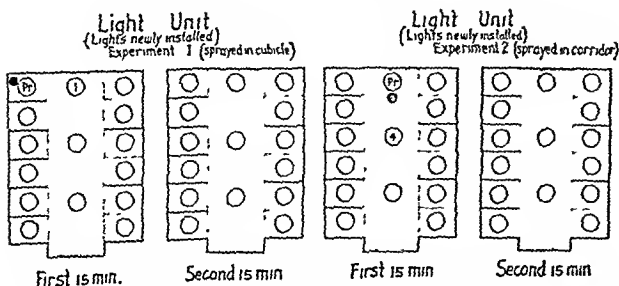


Fig. 9.—Penetration and survival of *B. prodigiosus* in light unit. In experiment 1 the suspension was sprayed in a cubicle and in experiment 2 in the corridor. There is practically no penetration, and survival is for not more than fifteen minutes.

power. Experiments with the lights off gave results similar to those in the control unit.

Throughout the barrier unit, where doors and partitions had to remain closed during the experiment,

plates were exposed continuously for one hour. Therefore, only the extent of penetration and not the survival could be determined. The results (fig. 10) show that there was no penetration from cubicle to cubicle some from cubicle to unit corridor (as was expected) and but slight penetration from unit corridor to cubicle

COMMENT

These bacteriologic data on the spread of *B. prodigiosus* parallel the clinical observations on spread of infections of the respiratory tract in the three units both over the two year period and during the seasonal epidemic. Fifteen of 17 cross infections of infants occurred in the control unit, where also the seasonal epidemic broke out. *B. prodigiosus*, when sprayed in a cubicle of the control unit, penetrated into all the other cubicles of the unit. When sprayed in a cubicle of the light or the barrier unit this organism did not penetrate into other cubicles of the unit.

During the two years the principle of air conditioning alone, as used in the control unit, did not prevent the spread of infections of the respiratory tract, whereas the addition of germicidal light barriers or mechanical barriers was efficient. Which of the two principles is the one of choice cannot yet be decided. Each has its advantages and disadvantages, several of which may be mentioned. Germicidal light barriers require pro-

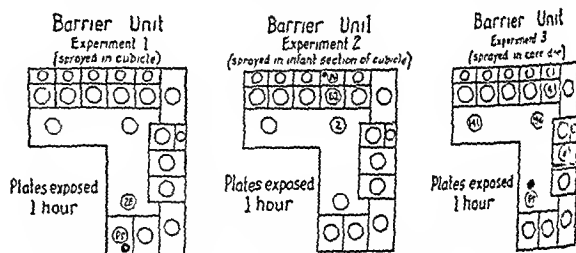


Fig. 10.—Penetration of *B. prodigiosus* in barrier unit. In experiment 1 a suspension was sprayed in a cubicle without a partition, in experiment 2 in the infant's section of a cubicle with a partition and in experiment 3 in the corridor. There was no penetration from cubicle to cubicle, slight penetration from cubicle to corridor as was expected, and slight penetration from corridor to cubicle.

tection of nurses and infants to prevent local effects on the skin and the conjunctivas. Investigations on any systemic effects have not yet been made. No harmful effects have been noted. The installation cost of the light is low, but the maintenance cost is high, regular lamp replacements being required. The mechanical barriers have been found somewhat inconvenient by the nurses, because the partitions must be raised and lowered each time an infant is attended. The infant cannot be observed readily. After a few weeks a certain lack of stimulation of the infant is occasionally apparent. On the other hand, the infant is protected against noise, so that the average daily sleeping time is about two hours longer than in the other units. The installation of mechanical barriers is expensive, but the maintenance cost is low. Whether light barriers or mechanical barriers are equally efficient without air conditioning is now under investigation.

CONCLUSIONS

Air conditioning, as used at The Cradle, did not prevent cross infections of the respiratory tract in infants.

Air conditioning and germicidal light barriers or air conditioning and mechanical barriers prevented such infections in infants.

9. Dzialoszinski, Jemar, and Finkelstein, H.: Was leisten offene Boxen bei der Bekämpfung der Tröpfcheninfektion in Kinderkränken? Ztschr. f. Kinderh. 41: 625, 1926.

DANGERS OF AERIAL TRANSPORTATION TO PERSONS WITH PNEUMOTHORAX

ROENTGENOGRAPHIC DEMONSTRATION OF THE EFFECT OF DECREASED BAROMETRIC PRESSURE (HIGH ALTITUDE) AND OF INCREASED BAROMETRIC PRESSURE

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ROCHESTER, MINN.

Free gas within the human body tends to increase in volume when a person ascends in altitude and to decrease in volume when the atmospheric pressure is increased. This is in accordance with Boyle's law, which states that the volume occupied by a given quantity of gas is inversely proportional to the absolute pressure exerted on it (figs. 1, 2 and 3). Gas enclosed within a body cavity is under pressure of the external atmosphere, but this pressure can be modified significantly by the elastic properties of the walls of the enclosing organ and by pressure of surrounding structures. Those body cavities which communicate with the external atmosphere, such as the paranasal sinuses, are capable of equalizing pressure changes, provided the ostiums are not obstructed, but such equilization is not possible within the cavity of a closed pneumothorax. These changes occur at comparatively low altitudes; for example, 1,000 cc. of air (saturated with water vapor at 37 C.) becomes 1,500 cc. of air at the moderate altitude of 10,000 feet above sea level, since the volume of gas thus enclosed in the body tends to vary in volume according to the ratio $\frac{760-47}{\text{Bar}-47}$. It must be noted that air within body cavities is saturated with water vapor and that the pressure of water vapor at 37 C. is 47 mm. of mercury. This ratio omits the small factor of negative intrapleural pressure, which amounts to only a few millimeters. It is obvious that the higher the altitude reached, the greater is the effect of water vapor (fig. 1).

Pneumothorax is of particular interest to the physician who deals with problems of aviation medicine. Under no other conditions is such a large quantity of gas enclosed within the body cavities with no means of escape. This large quantity of gas is enclosed by tissues which are usually elastic, offering little resistance to expansion. The adjacent organs are of extreme physiologic importance, and their functions may be seriously impaired if they are much compressed. Phthisiologists have learned that it is essential that artificial pneumothorax be maintained under as uniform a pressure as is practicable and that great caution be exercised to avoid either excessive reexpansion of the lung or excessive compression of the lung in refilling the pneumothorax cavity. Rapid and frequent and decided contraction and expansion of the collapsed lung might well be deleterious to the healing process. These precautions are necessary to prevent mechanical forces from interfering with the healing of tuberculous lesions by fibrosis and to prevent the rupture of pleural adhesions, which so frequently are present. Adhesions frequently are attached to diseased lung tissue and when torn loose may result in a seeding of the pneumothorax cavity with *Mycobacterium tuberculosis* and

the production of pleuritis, which may obliterate a valuable pneumothorax space or even lead to tuberculous empyema. Excessive compression of the lung also may reduce the vital capacity seriously and produce displacement of mediastinal structures with uncomfortable or even serious results. If expansion of the gas within the cavity does not occur, even greater strain might be placed on intrathoracic structures.

Further study of the effect of altitude on pneumothorax is especially timely because of the rapidly increasing use of the airplane as a means of long distance transportation.¹ The number of persons for whom artificial pneumothorax has been carried out is steadily increasing as a result of the increasing favor of this method of treating pulmonary tuberculosis. In a large majority of cases of active pulmonary tuberculosis, treatment by artificial pneumothorax is the treatment of choice. When satisfactory collapse is obtainable symptoms are promptly controlled, and as long as the state of collapse is maintained lesions usually remain latent. It has not been possible to determine when pneumothorax may be discontinued with safety; hence many physicians are recommending that pneumothorax be continued for several years and sometimes for many years, even though the patient remains well and an active member of society. As a result there are now thousands of persons with pneumothorax and many of them will be so maintained for years, if not for their entire lifetime. Furthermore, traumatic pneumothorax is not uncommon in injuries to the thorax, and spontaneous pneumothorax occasionally develops. For these reasons we believe it to be extremely important that physicians and patients learn all that can be known of the physiologic and pathologic effects of flight on the patient with pneumothorax.

In 1940 Gellenthien,² in an article on altitude and artificial pneumothorax, pointed out that a factor which may upset the equilibrium of a perfect collapse and be dangerous to the patient is the change in atmospheric pressure resulting from decided changes in altitude in traveling either by air or by surface transportation in mountainous regions. A formula was given to determine how high a person with a pneumothorax can go without the occurrence of positive pressure after a fresh supply of air has been injected into the pleural cavity. One of us³ in 1940 pointed out the effect of decreased barometric pressure on the volume of gas in a closed pneumothorax.

It is immediately obvious that clinical and physiologic studies should be conducted among patients with pneumothorax to determine, if possible, how closely the theoretical hazards and the practical hazards of airplane travel coincide. Clinical experience has taught that many patients with artificial pneumothorax may fly as passengers in commercial airplanes and suffer no immediate ill effects. Complaints have been so few that most physicians have not warned such patients to avoid flying. It is certain that these physicians would be most alarmed should an artificial pneumothorax be refilled with 1,000 cc. of air or more; yet this is precisely what should happen, theoretically, when a patient with a large pneumothorax cavity ascends to the moderate altitudes frequently attained by commercial planes.

From the Division of Surgery (Dr. Lovelace), and the Division of Medicine (Dr. Hinshaw), the Mayo Clinic.

1. Lovelace, W. R., II, and Hinshaw, H. C.: The Hazards of Aerial Transportation to Patients with Pneumothorax, *Proc. Staff Meet., Mayo Clin.* 16:40 (Jan. 15) 1941.
2. Gellenthien, C. H.: Altitude and Artificial Pneumothorax, *J. A. M. A.* 114:727-728 (March 2) 1940.
3. Lovelace, W. R., II, in discussion, *J. Aviation Med.* 11:9-11 (March) 1940.

In 1929 Rabino⁴ reported a case in which discomfort during aerial flight occurred in a patient with artificial pneumothorax. In the same year Margaria, Talenti and Reviglio⁵ reported their results of experiments on animals and advised against the aerial transportation of patients with artificial pneumothorax.

It would appear to be extremely important to determine by accurate roentgenographic methods whether or not the calculated expansion of pneumothorax during flight actually occurs or whether expansion is restrained and relative positive pressure develops. The theoretical degree of expansion which occurs at high altitude and an analysis of the several factors contributing to it have been published by Gellenthien and were discussed by one of us (Lovelace) in 1940.

Verification of these theoretical effects could not be conveniently accomplished during actual flight because of technical roentgenologic difficulties, but it is possible

thorax to expand on the basis of thickened pleura, adhesions, small capacity or other mechanical factors. One such patient underwent external pressures varying from two atmospheres to a half atmosphere with no visible differences in the roentgenograms. In this instance the condition of artificial pneumothorax was

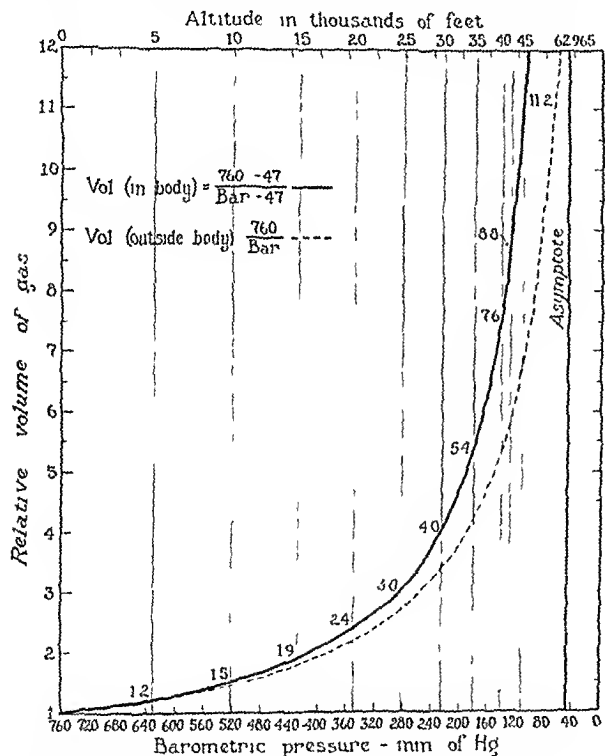


Fig. 1.—Comparative volumes of gases (saturated at 37 C.) inside the body at various altitudes. The pressure of water vapor at 37 C. (98.6 F.) equals 47 mm. of mercury.

to simulate any desired altitude within a low pressure chamber which is capable of accommodating the patient and the necessary apparatus. We have carried out this procedure in the Mayo Clinic Laboratory for Research in Aviation Medicine (Dr. Walter M. Boothby, director) and have been able to obtain roentgenograms of the thorax of good technical quality which clearly reveal the changes which occur in the size of a pneumothorax cavity when the pressure of the external atmosphere is either increased or decreased.

As anticipated, there was considerable variation among different patients. A few were found whose pneumothorax did not expand to the degree anticipated by the application of Boyle's law. In these instances it was possible to explain the failure of the pneumo-

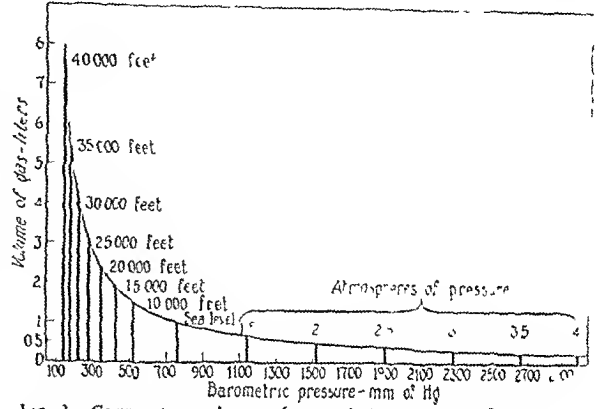


Fig. 2.—Comparative volumes of gases (saturated at 37 C.) inside the body at various increased and decreased barometric pressures

being discontinued, and the negative pressure doubtless was unusually high. The patient had recently suffered from severe pleuritis, and a considerable degree of pleural thickening was visible in the roentgenograms of the thorax. This patient experienced no subjective symptoms during the study, but the intrapleural pressures must have varied widely in relation to the other thoracic structures.

Another patient was studied for whom extensive basal pneumothorax had been established and who had been receiving frequent large "refills" under positive pressure by his home physician, with the production of a posterior basal mediastinal hernia and considerable dyspnea and thoracic discomfort. In figure 4a is shown the appearance of this particular pneumothorax at Rochester (elevation 1,000 feet above sea level) and in figure 4b is depicted the effect resulting from pressure of two atmospheres (1,525 mm. of mercury). These figures demonstrate that the pneumothorax cavity was reduced to approximately half its former size, with consequent reexpansion of the lung and relief of

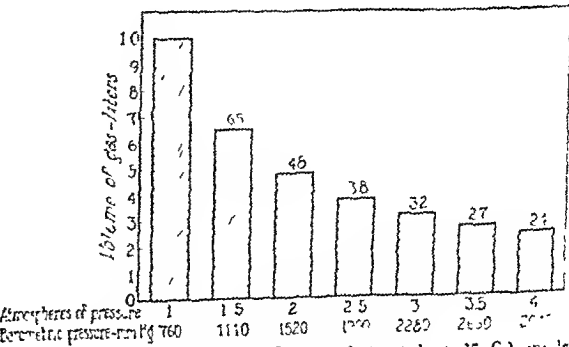


Fig. 3.—Comparative volumes of gases (saturated at 37 C.) inside the body at various increased atmospheric pressures

the patient's dyspnea as long as the external pressure was maintained (figs. 2 and 3). By this method it was possible to visualize roentgenographically how the pneumothorax, the lung and the mediastinum would appear when the pneumothorax was reduced in volume by a half, and this was accomplished without entering the pneumothorax cavity and within a few minutes time.

4 Rabino, A.: Pericoli dei viaggi aerei durante la cura pneumotoracica, *Minerva med.* (pt. 1) 9: 624-626 (April 28) 1929.
5 Margaria, R.; Talenti, C., and Reviglio, G. M.: Modificazioni indotte dalla depressione barometrica sul pneumotorace: Studio sperimentale radiologico, *Minerva med.* (pt. 2) 9: 637-647 (Oct. 27) 1929.

Three other patients entered the low pressure chamber, and the external pressure was reduced to simulate the effect of altitude of from 8,000 to 12,000 feet. Two of these patients had experienced discomfort during flight, and the procedure reproduced these symptoms. In 1 of these patients severe pleuritic pain in the anterior part of the thorax had developed on his ascent in a commercial passenger airplane to an altitude of 9,000 feet. He had sought medical advice as to the safety of this form of transportation in the future. The conditions of this flight were simulated in a low pressure chamber. The extent of the pneumothorax at ground level (1,000 feet), with extensive adhesions between the lung and the thoracic wall which appeared to be adequate to account for his pain, is shown in figure 5 *a*. The effect of simulated ascent to 10,000 feet is shown in figure 5 *b*. The effect on the small circumscribed basal pocket containing some fluid is especially apparent.

Another instance illustrating the effect of altitude on a pneumothorax is shown in figure 6 *a* and *b*. The appearance at ground level (1,000 feet) is shown in figure 6 *a*, and the effect of a simulated ascent to 10,000 feet is shown in figure 6 *b*. This patient had flown frequently and it was strongly suspected that the pleural

at low altitudes may give a patient a false impression of safety, encouraging him to engage in further flight in which higher altitudes are reached, because of weather conditions or because of the duration of the flight, with discomfort or actual danger to the patient. The evidence accumulated seems adequate to justify warning all

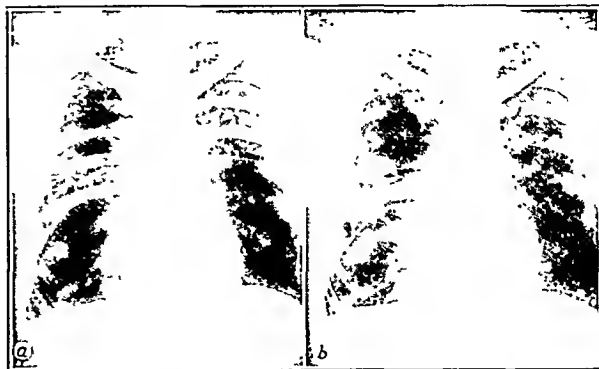


Fig. 5.—Partial artificial pneumothorax: *a*, appearance at Rochester ground level; *b*, appearance at simulated altitude of 10,000 feet above sea level. Compare size of basal fluid containing air pocket and of large apical pneumothorax with that in figure 5 *a*.

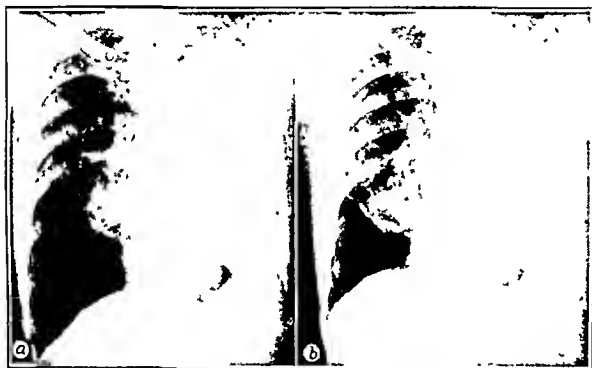


Fig. 4.—Basal pneumothorax and mediastinal hernia to contralateral side: *a*, appearance of the thorax at Rochester ground level (1,000 feet above sea level); *b*, appearance when atmospheric pressure is increased to twice that of sea level.

effusion was the result of the frequent, rapid and decided changes in the degree of collapse. The degree of collapse produced in the low pressure chamber was very similar to that which would be anticipated by the application of Boyle's law. It is important to emphasize the fact that great changes in pneumothorax volume were observed in these studies, with little or no subjective discomfort for 2 of the patients. Such large changes in volume would appear to be very hazardous, but the patient's subjective symptoms would not always give warning of these apparent hazards. When symptoms did appear, they were apparently attributed to traction exerted on pleural adhesions or to reduction in vital capacity as a result of excessive collapse. Willcox and Foster-Carter⁶ reported a case in which spontaneous pneumothorax occurred, during flight, in a pilot who had associated bullous emphysema as proved by roentgenograms and necropsy.

It would appear to be impossible to predict the safe "ceiling" for any patient with pneumothorax without actually subjecting him to flight or to experiments within a low pressure chamber, including the making of serial roentgenograms. Previous experience in flight

patients with pneumothorax to avoid transportation by airplane unless they can be assured that no altitude will be attained beyond that which they have previously tolerated without discomfort. Even under the latter condition it is possible that some harm might be done to unstable tuberculous lesions by the rather large degrees of alternate expansion and collapse which may be occurring repeatedly during a flight, especially when there are frequent landings. Traumatic or spontaneous pneumothorax would be affected in a manner similar to that described for artificial pneumothorax.

It should be reemphasized at this time that transportation by airplane offers no such hazards for those who do not possess pneumothorax, and that the exceptional comfort and speed available in modern airplanes, as well as care by stewardesses who are registered nurses, make airplane travel an ideal method of transportation for most patients. We believe, as a matter of fact, that physicians should encourage their patients to use the air-

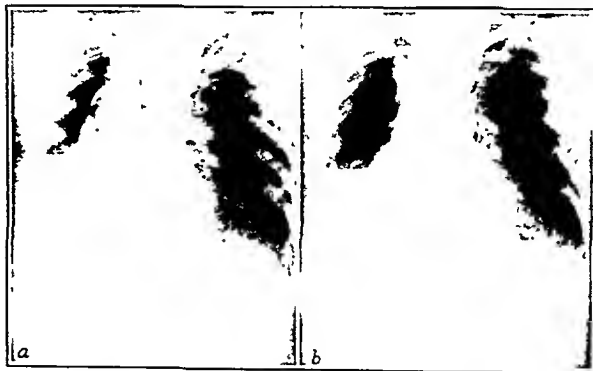


Fig. 6.—Hydropneumothorax: *a*, appearance at Rochester ground level; *b*, appearance at simulated altitude of 10,000 feet.

plane as a preferred mode of transportation. It is definitely superior to the automobile if the distance involved is considerable.

SUMMARY

Roentgenographic studies of the effects of increased and decreased barometric pressure on pneumothorax have been made. It has been possible to demonstrate

⁶ Willcox, A., and Foster-Carter, A. F.: Spontaneous Pneumothorax Associated with Bullous Emphysema, *Lancet* 2:315-317 (Aug. 7) 1937.

that the principle of Boyle's law applies to closed free pneumothorax. The degree of increased pulmonary collapse produced by a simulated increase in altitude, however, may be restricted by pleural adhesions, by thickening of the visceral pleura and by fixation of the mediastinum. The moderate altitudes (5,000 to 12,000 feet) commonly attained by commercial passenger carrying airplanes are sufficient to produce a pronounced increase in the size or the pressure of a pneumothorax, whether this is of therapeutic, spontaneous or traumatic origin. The dangers attending fluctuations in degree of pulmonary collapse are increased shortly after "refilling" of a pneumothorax, when pleural adhesions are present, when disease in the collapsed lung recently has been active, when the patient's vital capacity is limited or when the pneumothorax is unusually extensive. Patients with a pneumothorax created for therapeutic reasons should be warned of these dangers, and physicians who care for injured persons should recall the possibility that traumatic pneumothorax might be present, presenting similar hazards if the patient is transported by airplane.

HEPATIC CHANGES PRODUCED BY ESTRONE, ESTRADIOL AND DIETHYLSTILBESTROL

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In a previous communication we¹ showed that both diethylstilbestrol and estradiol may produce profound changes in the bone marrow and peripheral blood of dogs. The doses of these estrogens were in excess of the therapeutic range used in man. Changes in the liver consisting of fatty degeneration and central necrosis also were observed following the use of both drugs. However, these changes were not consistent and at the time we were unable to determine whether the hepatic change was the result of direct damage to the liver by the drugs or whether the hepatic damage was secondary to the changes in the bone marrow and peripheral blood.

Extensive clinical studies have resulted in a variance of opinion among different groups regarding the toxicity of diethylstilbestrol. Although some workers have suggested that side actions such as nausea may be the result of hepatic damage, no direct proof of this has been determined. One report implies that histopathologic hepatic changes may have been produced in a patient as the result of the administration of diethylstilbestrol.² Davis,³ in 5 cases in which large doses of diethylstilbestrol were administered, found no histologic hepatic change which he felt could be attributed to the drug. Our studies indicate that any liver change occurring in dogs receiving diethylstilbestrol may also

be found as the result of the administration of estrone or estradiol. It should be emphasized that microscopic studies of the livers of patients who have received large doses of the so-called natural estrogens are as yet wholly lacking. Apparently the "natural" or animal origin of these estrogens has not led to the suspicion that they might produce hepatic damage, while the synthetic nature of diethylstilbestrol immediately led to such suspicion.

PLAN OF STUDY

It seemed desirable to ascertain by a parallel study the effect on the livers of dogs of the more commonly used natural estrogens estrone and estradiol and of the synthetic estrogen diethylstilbestrol when administered in estrogenically equivalent doses.

As has been previously shown, natural or synthetic estrogens when administered to dogs produce profound changes in the blood and bone marrow. With progression of these changes, thrombocytopenic purpura occurs, which is followed by severe anemia and cachexia. It seemed possible that the anemic and the cachectic states might of themselves produce hepatic damage or might enhance previously existing hepatic damage and thereby interfere with the interpretation of the changes which might be produced in the liver by the estrogenic substances. In the present study, to avoid these possible complicating factors in the interpretation of the changes in the liver, we killed the animals before hemorrhage occurred.

MATERIALS AND METHODS

Eleven healthy dogs were used, 6 males and 5 females. All the animals were kept in the animal quarters for approximately two weeks before the studies were begun. In addition 4 dogs, 3 males and 1 female, served as controls and were examined post mortem at the end of the conditioning period. During this period of adjustment, red, white, differential, reticulocyte and platelet counts were done on the peripheral blood. After the experiments were started the peripheral blood elements were studied at frequent intervals.

The estrogens used were estrone, estradiol benzoate and diethylstilbestrol dipropionate.⁴ These substances were administered daily by intramuscular injection. Crystalline diethylstilbestrol dipropionate was also given by mouth.

In order that comparative observations might be made, the estrogenic potency of the estrone, estradiol benzoate and diethylstilbestrol dipropionate was calculated in terms of international units. Because of the diverse nature of these estrogens and the different methods of assay used in estimation of their potency, comparisons can of necessity be only approximate. One mg. of estrone is equivalent to 10,000 international units. Estradiol benzoate has a potency of 6,000 rat units per milligram. One mg. of diethylstilbestrol dipropionate is equivalent to 20,000 international (estrone) units. It is widely accepted that 1 rat unit is approximately equivalent to 10 international units. Therefore 5 mg. of diethylstilbestrol dipropionate is calculated to have roughly the same estrogenic potency as 1.66 mg. of estradiol benzoate or 10 mg. of estrone (100,000 international units). It must also be remembered that the esterification of estrogens as the dipropionate or the benzoate also influences the comparison of the endocrine activity, both as to potency and as to duration of action.

¹ A preliminary report of this work was read before the Central Society for Clinical Research, Chicago, Nov. 7, 1941.

² From the Department of Medicine and the Department of Pathology, Washington University School of Medicine, and the Barnes Hospital.

³ 1. Castrodale, Dante; Bierbaum, Olga; Helwig, E. B., and MacBryde, C. M.: Comparative Studies of the Effects of Estradiol and Stilbestrol on the Blood, Liver and Bone Marrow, *Endocrinology* 29: 363-373 (Sept.) 1941.

⁴ 2. Taylor, S. G., and Thompson, W. O.: Treatment of the Menopause with Stilbestrol, *J. Clin. Endocrinol.* 1: 411-415 (May) 1941.

⁵ 3. Davis, M. E.: A Clinical Study of Stilbestrol, *Am. J. Obst. & Gynec.* 39: 938-953 (June) 1940.

⁴ 4. Estrone for these studies was supplied by Roche-Organon, Inc., Nutley, N. J. Estradiol benzoate was supplied by the Medical Research Division of Schering Corporation, Bloomfield, N. J. Diethylstilbestrol was furnished by the Department of Medical Research of the Winthrop Chemical Company, New York.

Three dogs each received 100,000 international units of estrone (10 mg.) daily by injection. A group of 3 dogs were each given 10,000 rat units (1.66 mg.) of estradiol benzoate daily by injection. Diethylstilbestrol dipropionate was given to each of 3 dogs by daily injection in doses of 5 mg. (approximately 100,000 international units). Thus each dog in each of the three groups was given a daily dose of the respective estrogen approximately equivalent to 100,000 international (estrone) units.

One male and 1 female dog were given 400,000 international units (20 mg.) of crystalline diethylstilbestrol daily by mouth. This dose is four times that given by injection and is not calculated to be comparable in estrogenic potency to the estrogens given by injection.

All animals were killed when a severe thrombocytopenia developed but before the purpuric and hemorrhagic states occurred. Portions of liver and bone marrow from selected sites were immediately fixed in Bouin's solution. In addition, portions of liver were fixed in absolute alcohol and examined for glycogen by Best's carmine stain and in solution of formaldehyde U. S. P. diluted 1:10 and examined for fat by the scarlet red and Nile blue sulfate stains.

RESULTS

Liver.—The changes produced in the livers of the dogs receiving the different types of estrogenic substances were essentially similar. These alterations varied among the groups of dogs receiving different estrogenic substances, but this variation was no more pronounced than in a single group of dogs receiving the same estrogenic substance. In general the changes occurring in the parenchymal cells of the liver were not prominent.

Of the 3 dogs receiving diethylstilbestrol by injection, 1 showed slight to moderate fatty degeneration confined chiefly to the middle zones of the liver lobules and slight shrinkage of the hepatic cells centrally. The

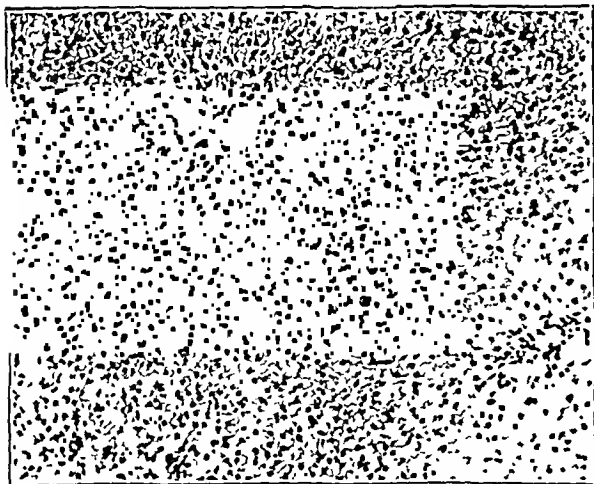


Fig. 1 (dog 19).—No drug given. Normal liver. The cytoplasm is rich in glycogen. In all four photomicrographs the stain was hematoxylin and eosin, and all are slightly reduced from a magnification of 133 diameters.

livers of the other 2 dogs exhibited slight fatty and hydropic degeneration of the hepatic cells confined chiefly to the central zones but not involving all central zones.

Of the 3 dogs receiving estradiol benzoate by injection, 1 showed moderate to advanced fatty and hydropic degeneration of the hepatic cells centrally and a slight

fatty degeneration of the other hepatic cells. There was moderate intracellular and extracellular hemosiderin in fine granules present in the central zones. There were a few polymorphonuclear leukocytes present in the central zones, but no fibrin was identified. The hepatic changes in the other 2 dogs consisted of slight

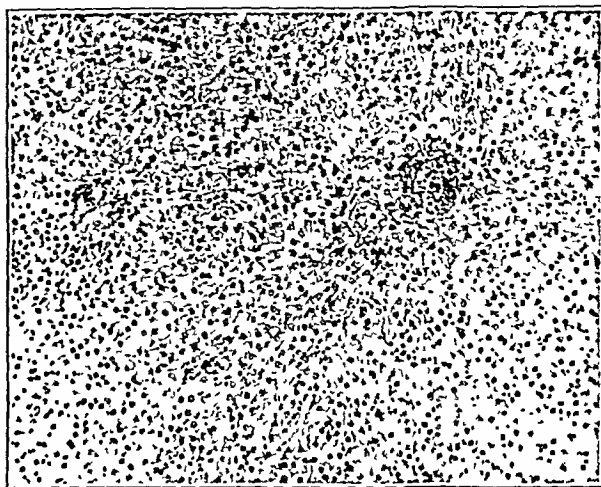


Fig. 2 (dog 30).—Diethylstilbestrol. Minimal fatty degeneration, predominantly central. Myelopoiesis about central vein.

shrinkage of the cells centrally and in some instances mild fatty and hydropic degeneration of the cells in the central zones.

Of the 3 dogs receiving estrone, 1 exhibited advanced fatty and hydropic degeneration of the hepatic cells centrally together with loss of nuclei and cell outlines in some instances. There was no noticeable infiltration of polymorphonuclear leukocytes within the vacuolated areas, although many of the zones contained foci of myelopoiesis. The hepatic changes in the remaining 2 dogs consisted of slight shrinkage of the central cells in some instances and occasionally slight fatty degeneration of the hepatic cells.

Of the 2 dogs receiving diethylstilbestrol by mouth, the liver of 1 showed a minimal amount of central fatty degeneration and slight shrinkage of cells centrally. The liver of the other dog showed a minimal amount of fatty degeneration diffusely distributed throughout the lobules.

The amount of fat present within the livers as determined by the scarlet red and Nile blue sulfate stains was at times no more pronounced in those animals receiving the various types of estrogen than it was in normal animals.

In several specimens the vacuoles within the hepatic cells failed to stain with scarlet red but took a blue or purple tint with the Nile blue sulfate stain. In a few specimens the hepatic cells centrally contained vacuoles which failed to stain with either the scarlet red or the Nile blue sulfate stain and were considered to be hydropic degeneration.

The amount of glycogen present within the livers as determined by Best's carmine stain showed considerable variation but was usually scanty. In no instance could glycogen be demonstrated in the large clear vacuoles. No correlation could be established between the amount of glycogen present and the degree of fatty and hydropic degeneration. Our observations are therefore at variance with those of Teague,⁵ who studied

5. Teague, R. S.—The Effect of Estrogens on the Microscopic Appearance of the Liver. *J. A. M. A.* 117:1242-1243 (Oct. 11) 1941.

the effects of diethylstilbestrol and of estradiol on the livers of rats. He concluded that the vacuolization of the liver cells was due to accumulation of glycogen rather than to hydropic or fatty degeneration.

One of the most striking findings in the liver was the occurrence of foci of myeloid cells about the central veins and occasionally about the portal spaces. These cells varied from predominantly immature myeloid cells to predominantly mature polymorphonuclear leukocytes. In those animals in which the hyperplasia of the bone marrow was least pronounced the liver usually contained fewer and smaller foci of myeloid cells. In those animals in which myeloid foci were present in the liver the degree of maturation of the myeloid cells in the liver tended to parallel the degree of maturation of myeloid cells in the bone marrow. An occasional mitotic figure was encountered in the foci of myeloid cells in the liver.

Bone Marrow.—Examination of the bone marrow from the vertebrae, ribs and long bones revealed an alteration of the normal marrow elements. This alteration showed slight quantitative variations but was otherwise essentially similar in all instances, regardless of the type of estrogen used. In general, regardless of the type of estrogenic substance employed, the marrow showed a variable degree of hyperplasia, predominantly of the myeloid elements. However, the state of maturation of the myeloid cells was variable, some marrows showing predominantly immature cells, some showing predominantly mature polymorphonuclear leukocytes and others showing focal areas composed chiefly of either immature or mature cells. The degree of maturation was usually more advanced in marrows studied from the long bones and ribs than it was in marrow selected from the vertebrae. In many instances the erythrogenic elements were obscured by the myeloid hyperplasia, but in general erythropoiesis appeared reduced. In a few specimens there were scattered small foci of hypoplasia in which the erythrogenic cells predominated. The stroma within these foci was loose and

was not a striking feature. Other megakaryocytes contained only two to three nuclei.

Peripheral Blood.—Essentially the same response was produced in the peripheral blood elements by estrone and estradiol benzoate as was observed with diethylstilbestrol dipropionate. The changes produced by the

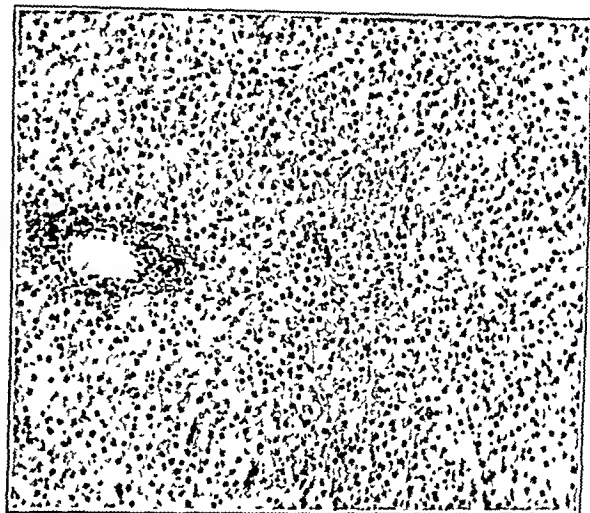


Fig. 4. (dog 39).—Estrone. Slight central fatty degeneration. Myelopoiesis about central vein.

various estrogens were indistinguishable as to quality and degree. The findings in each group consisted of leukocytosis and an almost simultaneous rapid fall in the thrombocytes. In some instances the platelets disappeared entirely from the blood. A moderate decrease in the red blood cells and hemoglobin was observed to follow the rise in granulocytes. The decrease in red blood cells and hemoglobin took place in the absence of hemorrhage, the occurrence of which we were careful to avert. These animals were not allowed to run their full course, since in this study we were primarily interested in hepatic changes. A full report of hematologic observations has been published.¹

COMMENT

Until comparatively recently it was believed that all estrogenic substances must contain the phenanthrene nucleus. It is now known that many synthetic compounds not containing the phenanthrene nucleus are estrogenic. Diethylstilbestrol, the most widely studied of the synthetic estrogens, is approximately twice as potent when injected intramuscularly as the natural hormone, estrone. Even more important from the clinical standpoint is the fact that, unlike the natural estrogens, it is highly effective when taken orally. Since diethylstilbestrol does not occur in the animal body, it must be considered a drug rather than a hormone. For this reason a great deal of attention has been devoted to its possible toxic effects. Studies of hepatic function performed by ten different groups of workers on a large number of patients have not shown any clearcut evidence of damage to this organ.⁶

The fact that several investigators⁷ have found evidence of hepatic damage resulting from the administration of diethylstilbestrol when given in very large doses

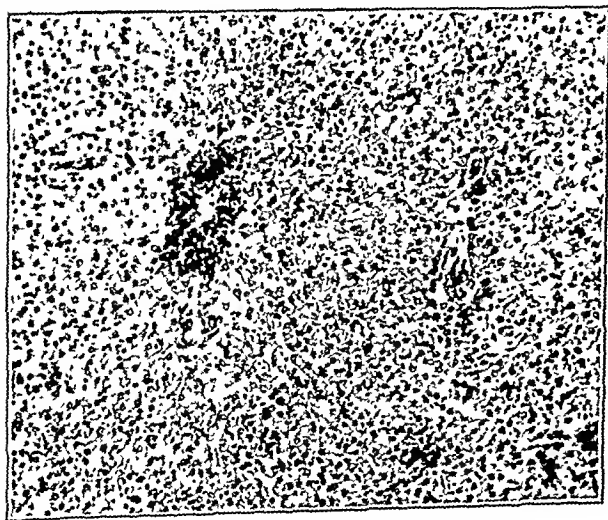


Fig. 3 (dog 24).—Estradiol benzoate. Minimal central hydropic and fatty degeneration. Myelopoiesis about central vein.

edematous and frequently took a faintly basophilic or acidophilic stain. One of the most constant changes throughout all the specimens of marrow studied was a sharp decrease in the number of megakaryocytes. In many instances several microscopic low power fields failed to disclose a single megakaryocyte. Occasionally these cells showed shrunken basophilic nuclei, but this

6. Morrell, J. A. Summary of Some Clinical Reports on Stilbestrol. *J. Clin. Endocrinol.* 1: 419-424 (May) 1941.
7. Loeser, A. *Klin. Wchnschr.* 18: 346, 1939. Grunke, P. *ibid.* 18: 1195, 1939. Sebe, H. *ibid.* 18: 1195, 1939. von Haam, E. *ibid.* 18: 1195, 1939. Rardin, T. E., and Schene, R. *ibid.* 18: 1195, 1939.

to animals indicates the need for a study such as the one presented here. The synthetic nature of diethylstilbestrol has no doubt caused the concentration of toxicity studies on it. Heretofore the possible toxic effects of the so-called natural estrogens have been neglected. We therefore have given approximately equivalent estrogenic doses of the natural hormones and of diethylstilbestrol to dogs and have studied the effects. The results of the present study confirm our previous observations¹ that diethylstilbestrol and estradiol produce similar effects on the blood and bone marrow of dogs. We have in addition, as shown in the table, found

observation or tests of hepatic function any evidence of damage to the liver among a large number of patients treated with diethylstilbestrol. It seems unlikely that the usual therapeutic doses of diethylstilbestrol or of the natural estrogens will produce hepatic damage. There may, of course, be a great difference in species susceptibility, but it would seem possible that extremely large doses of either synthetic or natural estrogens might produce changes in the liver in human beings. We may conclude from this study that, when given to dogs, large doses of the natural estrogens estrone and

Liver and Blood Changes Produced by Estrogens

Dog	Drug	Daily Dose	Day Killed	Total Dose	Hepatic Changes	Blood Changes									
						Day	P. M. N.			Mve lo. Blood	Red Blood Cells	Hemoglobin		Platelets	Reticulo cytes
							W. B. C.	Seg.	Bands			Gm	%		
12 ♀	Diethylstilbestrol	5 mg	20	100 mg	Slight central fatty and hydropic degeneration, moderate myelopoiesis, maturation variable	1	22,000	42	7	0	6,090	14.6	94	1,150,000	4.4
						15	44,000	44	35	0	5,100	11.9	77	81,000	2.4
						18	82,000	33	51	3	4,810	12.4	80	4,800	0.0
10 ♂	Diethylstilbestrol	5 mg	17	85 mg.	Minimal fatty degeneration, predominantly central; moderate myelopoiesis, predominantly mature	1	9,930	68	9	0	5,370	12.9	84	1,300,000	0.4
						11	31,300	76	10	0	5,500	12.4	80	350,000	0.2
						17	91,000	53	36	2	4,950	11.9	77	19,000	0.2
11 ♀	Diethylstilbestrol	5 mg	16	80 mg.	Moderate midzonal fatty degeneration; minimal myelopoiesis	1	13,350	69	13	0	5,240	15.8	102	1,020,000	0.2
						12	34,900	65	22	0	6,660	17.7	115	90,000	1.2
						16	85,500	58	22	15	4,420	11.7	76	0	0.2
11 ♂	Estradiol benzoate	16 mg	20	32 mg	Advanced central fatty and hydropic degeneration; slight myelopoiesis, predominantly mature	1	21,500	60	4	0	6,000	15.0	97	1,500,000	0.4
						12	30,000	61	11	0	6,040	12.2	79	480,000	1.8
						20	56,950	60	27	2	7,200	15.9	103	35,000	0.4
24 ♂	Estradiol benzoate	16 mg	17	27.2 mg.	Minimal central fatty and hydropic degeneration, slight erythropoiesis; moderate myelopoiesis, predominantly mature	1	22,200	54	9	0	5,030	12.7	73	680,000	2.6
						8	44,700	63	16	0	5,000	12.3	89	600,000	2.0
						17	47,000	43	33	15	1,790	4.5	29	0	0.1
31 ♀	Estradiol benzoate	10 mg.	17	27.2 mg	Slight shrinkage of hepatic cells centrally; minimal myelopoiesis, equal degree of mature and immature	1	21,600	65	5	0	5,070	13.4	86	905,000	0.0
						10	51,900	54	27	1	4,700	12.4	80	500,000	0.1
						17	83,000	42	36	8	2,030	4.0	31	4,000	0.0
59 ♂	Estrone	10 mg	18	180 mg	Slight central fatty degeneration; moderate myelopoiesis, predominantly mature	1	9,900	55	4	0	6,440	15.2	98	1,700,000	1.0
						13	24,600	52	17	1	6,320	15.0	97	100,000	1.0
						18	27,000	50	35	2	4,450	9.2	60	4,400	0.0
41 ♂	Estrone	10 mg	22	220 mg	Advanced central fatty and hydropic degeneration moderate myelopoiesis, mature	1	19,500	48	7	0	6,520	15.5	100	1,600,000	4.6
						12	38,800	55	16	0	6,200	12.3	79	230,000	2.2
						19	45,000	56	30	4	5,200	13.6	88	0	0.2
40 ♀	Estrone	10 mg	22	220 mg.	Slight central fatty degeneration, moderate myelopoiesis, mature	1	11,700	45	10	0	6,480	13.6	88	1,320,000	1.6
						14	36,800	45	21	4	5,900	12.4	80	210,000	2.4
						19	56,200	56	26	6	3,810	9.7	63	12,000	0.2
20 ♀	Diethylstilbestrol	(Oral) 20 mg	33	660 mg.	Minimal central fatty degeneration; moderate erythropoiesis, minimal myelopoiesis, immature	1	20,230	47	10	0	5,690	14.2	92	970,000	4.4
						10	31,450	70	24	3	5,270	14.6	94	750,000	1.0
						21	65,000	44	40	5	3,940	10.0	67	5,000	0.0
						33	1,050	20	2	0	1,820	4.9	31	14,000	10.0
26 ♂	Diethylstilbestrol	(Oral) 20 mg	33	660 mg.	Minimal diffuse fatty degeneration, slight erythropoiesis; moderate myelopoiesis, immature	1	11,130	42	5	0	5,700	13.0	81	1,300,000	3.2
						19	42,000	40	27	7	4,930	10.7	70	360,000	0.6
						31	16,350	63	13	1	3,810	8.0	52	38,000	3.0
						32	5,200	46	17	0	1,080	6.7	41	190,000	2.6

that estrone produces results indistinguishable in these respects from those following estradiol or diethylstilbestrol. The livers of animals receiving large doses of estrone or of estradiol benzoate showed definite changes which cannot be distinguished in type or degree from the hepatic changes produced by estrogenically equivalent doses of diethylstilbestrol dipropionate.

It must be emphasized that the doses of the estrogens used in these experiments are approximately twenty-five times as large per unit of body weight as the maximum therapeutic dose usually employed in treating patients. We have not been able to detect by clinical

estradiol produce hepatic changes indistinguishable from those produced by diethylstilbestrol.

SUMMARY

Large doses of the "natural" estrogens estrone and estradiol benzoate produce changes in the liver, bone marrow and peripheral blood of dogs indistinguishable from those produced by the synthetic estrogen diethylstilbestrol. Hepatic changes following estrogenically equivalent doses of the three estrogens consisted of fatty degeneration and hydropic degeneration. In general, alterations in the parenchymal cells were not widespread or prominent. Since these changes occurred before the appearance of any hemorrhagic state, they were presumably the result of direct action on the liver. Extramedullary myelopoiesis occurred within the livers of animals receiving these estrogens.

¹ MacBryde, C. M., Freedman, Harold, Loeffel, Ellen, and Castrodale, Dante. The Synthetic Estrogen Stilbestrol. *Clinical and Experimental Studies*, J. A. M. A. 115: 440-443 (Aug 10) 1940. MacBryde, C. M., Castrodale, Dante, Loeffel, Ellen, and Freedman, Harold. The Synthetic Estrogen Diethylstilbestrol. *Clinical and Experimental Studies*, 11, ibid. 117: 1240-1242 (Oct 11) 1941.

VERTIGO DUE TO OBSTRUCTION OF THE EUSTACHIAN TUBES

A CLINICAL STUDY BASED ON ONE HUNDRED AND THIRTY-FIVE CASES

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Vertigo caused by obstruction of the eustachian tubes is a distinct clinical entity which has received but scant attention both in the literature and in practice. My own experience in the treatment of 135 cases of this type has proved that many patients suffer unnecessarily the distressing symptoms of vertigo, nausea and vomiting, sometimes for long periods, because their physicians fail to recognize the cause and to institute the simple procedure of mechanical inflation of the eustachian tubes which would bring them relief.

The reason these cases are so consistently overlooked probably is that they are seen usually by the medical man or general practitioner, who is likely to think in terms of disturbances in the digestive, circulatory or nervous systems and hence to ignore the possibility that violent symptoms of dizziness, nausea and vomiting may be attributable to stenosis of the eustachian tubes.

Most of the references to vertigo of this type in the literature have been made in general discussions on vertigo due to various causes, but a number of authors, including Atkinson,¹ Baumel,² Brand,³ Scott,⁴ Mollison⁵ and Richey,⁶ have listed eustachian obstruction or stenosis as one of the principal causes of vertigo. It is true, of course, that there are many other conditions which may cause vertigo, but since obstruction of the eustachian tube is one of the most obvious, and also the most easily corrected, every patient with symptoms of dizziness and nausea should be subjected to the therapeutic test of inflation of the tubes as a first step in a thorough clinical investigation. This procedure should be carried out only by an otolaryngologist who is skilled in the passing of eustachian catheters and bougies.

GENERAL CONSIDERATIONS

My records of the past few years include 135 cases of vertigo relieved by inflation of the eustachian tubes. In this series of patients 34 per cent were men and 66 per cent were women. Approximately half of the group were between 40 and 60 years of age. Eighty per cent were between 30 and 70, and the remaining 20 per cent were young or extremely aged.

The obstruction or stenosis of the eustachian tubes was associated with acute or chronic inflammation of the nasal sinuses or ears in a large proportion of cases. The condition was associated with head colds in 15 instances. Fifteen patients complained of a feeling of fullness in the ears, along with the vertigo. Tinnitus accompanied the vertigo in 53 instances, and 39 patients had some reduction of hearing. In 7 of these the dis-

turbance in hearing was temporary. Only 2 patients had discharging ears. Tonsillitis was present in 2 cases. One case was associated with alcoholism.

The duration of the vertigo was variable. In some cases the symptoms had been present only a few days; in others, weeks, months and even years.

SYMPTOMS

Many of the patients in this series had been under treatment for long periods and had gone to numerous physicians to seek relief from nausea, poor appetite, so-called bilious attacks, constipation, nervousness and many other symptoms, which usually had been ascribed to digestive disturbances. I have seen 2 or 3 patients who had histories quite typical of peptic ulcer and had been under observation and treatment for this condition, with no relief. Later their distressing symptoms were completely controlled by reestablishment of the patency of the eustachian tubes.

The cases of insidious onset are the ones most likely to be overlooked. In these instances, because the gastrointestinal symptoms are predominant, the patients are likely to be subjected to various types of treatment over long periods for diseases of the digestive system.

When the onset of the symptoms of nausea and vertigo is sudden and severe, the diagnosis is more easily established, and, if the proper treatment is instituted promptly, the relief is striking and dramatic.

A typical instance in which the onset was sudden was that of a young physician, previously in good health, who was extremely dizzy and severely nauseated one morning as he attempted to get out of bed. He lay back in bed and found that every time he moved or tried to raise his head he was overcome by extreme nausea to the point of vomiting. He became alarmed about his condition and called Dr. James T. Ledman, who recognized the trouble and suggested that he come to my office for treatment. (Dr. Ledman is an internist who has frequently made the diagnosis in this series and has referred the patients to me for treatment.)

Because the patient was suffering from such extreme nausea, it was 12:30 before he could get to my office. He came in, assisted by his wife, carrying a large towel and an emesis basin. He was walking with his legs far apart and holding on to the wall. He was extremely pale and was perspiring profusely. After he was assisted to the chair, a catheter was passed into the eustachian tubes; this was followed by a bougie, and then slight air inflation. Only the right eustachian tube was obstructed, and when this was opened the patient moved his head from side to side and stared in amazement as he announced "Why, my dizziness is gone!" He rose from the chair immediately, stood up, turned a few times, and walked around the room, shaking his head from side to side, and still could elicit no vertigo. Then he said suddenly "I have a call to make at 12:30—I can still get there." And he rushed from the room.

There have been many other instances just as dramatic as this one. In fact, the physician who was the patient in the foregoing instance was responsible for referring the following patient, and this shows that the results can be just as striking when the symptoms have been present for a long period.

The patient was a man past 60 who had a moderate hypertension. He had been confined to his bed for six weeks because of vertigo and had difficulty at times

1. Atkinson, E. M.: Aural Vertigo, New York State J. Med. **37**: 555 (March 15) 1937.

2. Baumel, Siegfried: The Clinical Interpretation of Vertigo, Ohio State M. J. **26**: 33 (Jan.) 1930.

3. Brand, G. B.: Aural Vertigo, J. Laryng. & Otol. **52**: 756 (Nov.) 1937.

4. Scott, Sydney: Observations on Vertigo, Practitioner **136**: 302 (March) 1936.

5. Mollison, W. M.: The Operative Treatment of Vertigo, Guy's Hosp. Rep. **85**: 361 (July) 1935.

6. Richey, deW. G.: Vertigo, West Virginia M. J. **32**: 389 (Sept.) 1937.

in retaining his food, because the effort of trying to sit up and eat frequently caused severe vomiting. Hence his physician asked me to go to his home, to carry out the treatment. A eustachian catheter, and then a bougie were passed, and the middle ear was inflated with a hand bulb. The right tube was patent, but the left was closed, and after it was opened the patient raised his head and said "My dizziness is gone!" Whereupon he got out of bed and walked around the room unassisted. This occurred three months ago, and the patient has had no recurrence of the dizziness since.

In some cases the onset of symptoms is fleeting. The patient may awake some morning and, in attempting to turn over in bed, notice a transitory dizziness. If he attempts to get out of bed suddenly, an attack of severe vertigo may ensue, so that he may have to steady himself or be assisted to keep from falling. Frequently in such instances, if the patient gets to his feet and stands still for a few moments with his eyes closed, the dizziness disappears, and then, with some care, he is able to go about his daily routine. Sudden change of position, such as stooping, however, may bring on the vertigo for several minutes. As the day goes on, the symptoms become less pronounced and the patient may be comparatively free from trouble during the day. For this reason a patient with this type of history does not seek relief until the condition becomes worse and he is incapacitated by it.

RECURRENCES

Although some patients in this series have apparently received permanent relief from only one inflation of the eustachian tubes, there have been many who had a recurrence of the same symptoms, which were again relieved by inflation of the eustachian tube. These recurrent attacks may be associated with acute head colds or exacerbations of a catarrhal condition or some irritation of the mucous membranes such as that caused by excessive smoking.

In some cases, in which the condition has progressed gradually over a long period, dilation of the eustachian tubes at regular intervals has proved necessary. Some patients have been treated regularly for two years or more. As an example, I have in mind a patient who was past 70 years of age. For a time he came in at regular intervals and was thus able to carry on his business and go to his office routinely. However, if he lapsed in his routine of treatment he would wake up a few mornings later to find that he was unable to get out of bed and would start vomiting severely. On several occasions it was necessary for me to go to his home to carry out the treatment. I have been called to his home and found him in a darkened room, flat on his back with ice cloths over his eyes, and any movement or attempt to talk would bring on severe retching. Yet after treatment he would be out of bed, dressed and on his way to his office within half an hour.

TREATMENT

As already indicated, the treatment consists in passing a catheter into the eustachian tube and then a bougie, followed by inflation with air. When this procedure is carried out with care and caution there is no danger of rupture of the tympanic membrane or trauma to the eustachian tubes. I have used the procedure thousands of times without ill effects of any kind.

Although the immediate aim in these cases is to establish the patency of the eustachian tube at once—

and this must be done by the mechanical procedure outlined—it is also important to maintain the patency of the tube. In some cases this can be achieved only by repeated inflations, but in others a thorough investigation may reveal some underlying difficulty that can be corrected. Chronic sinus infections, chronic tonsillitis and ear infections may be causing or contributing to the obstruction of the eustachian tubes, and, if present, the proper measures should be taken to eradicate them.

Allergy is a factor in some of these cases, and the patency of the eustachian tubes can be maintained by removal of the offending allergen. As has been noted, 1 case in the series was associated with alcoholism. Many patients have experienced great improvement by moderation or elimination of smoking. Abstinence from tobacco is always advisable in these cases.

It is also worth while to investigate the basal metabolic rate of patients with recurrent vertigo due to eustachian obstruction. A significant number have a low metabolic rate, and the patency of the eustachian tubes is improved or maintained when thyroid is administered.

COMMENT

Although my purpose in this presentation is to discuss the clinical manifestations and treatment of obstruction of the eustachian tubes, a word may be added concerning the probable mechanism by which the symptoms are produced. It seems obvious that obstruction of the eustachian tube somehow disturbs the air pressure and causes stimulation of the perilymph, which interferes with normal balance as maintained by the labyrinthine mechanism.

Vertigo is caused in most cases, and perhaps in all, by unilateral eustachian obstruction. The obstruction was recorded as bilateral in approximately one third of the cases I have observed, but it may be that the pressure disturbance in these cases was unequal on the two sides. In another third of the cases the obstruction was unilateral, and in the remaining third one side was more completely obstructed, or the obstruction occurred on alternate sides in different attacks and hence could be regarded as unilateral. Scott¹ noted in the examination of aviators during the war that when it was found that both eustachian tubes were inefficient and both tympanic membranes were compressed inward there was deafness without vertigo but that when only one eustachian tube was obstructed vertigo was prominent, owing to heterogeneous stimuli. Richey⁶ noted similar observations on pilots who had attacks of vertigo and nausea, after high flying, due to unilateral obstruction of the eustachian tube.

I have made an interesting observation in several instances during the treatment of these patients which proves quite conclusively that the vertigo and nausea are the direct result of the eustachian obstruction. In some instances in which there was marked obstruction it has been possible to reproduce severe attacks of vertigo during inflation, and these have been relieved promptly by passing a bougie to allow air to escape from the middle ear and thereby to relieve the increased pressure produced by inflation. From this it would appear that the perilymph is disturbed by abnormal variations in pressure, either increased or decreased.

In many of the cases it has been noted that the staggering is in the direction of the obstructed side, although this has not been invariably true, according

to my observations. At any rate the direction of the gait furnishes a clue as to the side which may be affected.

SUMMARY

Vertigo caused by obstruction of the eustachian tube is a distinct clinical entity which is often overlooked. An experience in the treatment of 135 cases of this type has proved that distressing symptoms of vertigo, nausea and vomiting, sometimes present for long periods, can be relieved by mechanical inflation of the eustachian tubes. Since obstruction of the eustachian tube is one of the most obvious and also the most easily corrected causes of vertigo, every patient with dizziness and nausea should be subjected to the therapeutic test of inflation of the tubes as a first step in a thorough clinical investigation.

In this series approximately two thirds of the patients were women. Approximately half were between 40 and 60 years of age. The obstruction of the eustachian tubes was associated with acute or chronic inflammation of the nasal sinuses or ears in a large proportion of cases. The duration of the symptoms varied from a day or two to several years.

The symptoms may be of sudden onset or the condition of vertigo may develop gradually and intermittently. In the latter type the true cause of the difficulty is often overlooked and the patients are subjected to a variety of treatments for supposed disorders of the digestive system which yield no benefit.

Some patients are relieved permanently by only one or two inflations of the eustachian tubes; in other cases, the symptoms recur and may again be relieved by reestablishing the patency of the eustachian tube. In addition to the mechanical procedure of inflation, proper treatment of these patients demands attention to chronic sinus infections and chronic tonsillitis, to possible allergic factors and irritants, such as tobacco, and an investigation of the basal metabolic rate.

The vertigo is caused in most instances, and perhaps in all, by unilateral eustachian obstruction or by more complete obstruction on one side than the other. The direction of the gait furnishes a clue to the side which may be affected, for in most of the cases the staggering is in the direction of the obstructed side.

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Energy Metabolism.—Accurate measurements by means of the calorimeter have shown that the average total metabolism of a man sitting still is about 100 calories per hour; while the same man working actively increases his metabolism up to about 300 calories per hour; and a well trained man working at his maximum capacity metabolizes material enough to liberate 600 calories per hour, i. e. his metabolism may be six times as active during the hours actually spent in such work as when he is at rest. If during twenty-four hours a man works as hard as this for eight hours and spends two hours in such light exercise as going to and from work, his food requirement for the day will be somewhat over 6,000 calories, or three times the maintenance requirement. Thus, work may increase the day's metabolism as much as 200 per cent, whereas liberal feeding at the end of a fast was found to increase the metabolism only 22.5 per cent, or one ninth as much. Only a few exceptional occupations, such as that of lumbermen, for example, involve such heavy work as to cause a metabolism of 6,000 calories per day. More often the man who works eight hours a day at manual labor will increase his metabolism by 1,000 to 2,000 calories above what is needed for maintenance at rest, making his total food requirement 3,000 to 4,000 calories.—Sherman, Henry C.: *Chemistry of Food and Nutrition*, New York, Macmillan Company, 1941.

APPENDICAL PERITONITIS

EXPERIMENTAL AND CLINICAL INVESTIGATIONS
INTO THE CAUSES OF THE HIGH
MORTALITY

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The most effective means of reducing the high mortality of appendical peritonitis is the prevention of perforation of the acutely inflamed appendix by teaching the public the dangers of taking laxatives and delaying hospitalization in the presence of abdominal pain. These investigations have already been reported under the prophylactic aspect of the Philadelphia plan.

The scientific aspect presented here includes experimental and clinical research to develop an improved management of patients suffering with spreading peritonitis and to provide continuous research toward further improvement.

The dog has proved to be well adapted for experimental investigations because:

Peritonitis similar to that observed complicating acute appendicitis in man can be induced in the dog by ligating the mesentery and the base of the appendix and administering castor oil immediately after operation.¹

Gross tissue reactions in the dog following the induction of gangrene of the appendix are similar to those observed in gangrenous appendicitis in man.

Changes in the cellular content and chemical composition of the blood and peritoneal exudate preceding rupture and development of the localizing or spreading process are similar in man and dog.

Symptoms and signs accompanying micro-organismal invasion of the peritoneal cavity are likewise similar in the two species.

Recovery from spreading peritonitis in man is preceded or accompanied by the development of an abscess. The dog that recovers from induced spreading peritonitis also develops an abscess which is absorbed.

Death occurs in both man and dog because the reactive capacity of their tissues to the micro-organismal invasion is inadequate.

As these similarities were recognized, the practicality of using the reactions in the dog to measure the value of different methods of management of appendical peritonitis in man became evident. Variables are few. The incidence and mortality of peritonitis in dogs could be varied by withholding or changing the time of administration or the amount of laxatives following ligation of the appendix; without administration of a laxative, 50 per cent of the dogs recovered after an appendical abscess had developed; when 30 cc. of castor oil was given twenty-four hours after operation 68 per cent died; when 60 cc. of castor oil was given immediately after operation 91 per cent died.

Of the patients admitted to hospitals in Pennsylvania with a diagnosis of acute appendicitis or appendical peritonitis, 3,427 had not received laxatives and only 1 in 62 died; 5,868 had taken one laxative and 1 in 19 died; 921 had taken more than one and 1 in 9 died.

From the Foundation for Clinical and Surgical Research and the Philadelphia General Hospital.
The authors received assistance from Dr. J. H. Clark, Chief of Laboratory, and J. G. Reinhold, Ph.D., of the Philadelphia General Hospital.
1. Bower, J. O.; Burns, J. C., and Menzies, H. A.: Induced Spreading Peritonitis Complicating Acute Perforative Appendicitis, *Surg., Gynec. & Obst.* 66: 947-961 (June) 1938.

Man and dog react similarly to surgical procedures instituted in the presence of localizing or spreading peritonitis. Dogs invariably die soon after operations performed during the active stages of an induced peritonitis, and death occurs earlier and more frequently in man when removal or attempted removal of the appendix is instituted before the peritoneal infection becomes localized.²

Likewise, the investigations of agents for combating the toxemia of spreading peritonitis showed that those which produced the lowest mortality in dogs reduced the mortality in man in the same degree when the method of administration and dose were the same.³

Of the 180 dogs treated for induced peritonitis, the lowest mortality was obtained in the group treated with lyophilized serum obtained from the blood of dogs recovered from spreading peritonitis.¹ A group of patients treated identically with lyophilized convalescent peritonitis serum showed a decided improvement over any other form of treatment. That the cellular elements of the blood played little or no part in their improvement is shown by the fact that dogs with spreading peritonitis treated with direct transfusions of whole blood showed no improvement. In fact, in one such group the mortality was even higher than in the untreated group.³

We had used lyophilized convalescent peritonitis serum from 1935 to 1940, at which time we changed to lyophilized plasma in the treatment of spreading peritonitis in man, thereby eliminating delay and technical difficulties. It can be given immediately after the diagnosis has been made. Pooling diminishes reactions, and we have kept ampules of plasma at room temperature as long as fifteen months. Mahoney,⁴ Bond and

Following the intramuscular injection of lyophilized convalescent peritonitis serum we observed that intestinal peristalsis occurred earlier than with any of our previous forms of treatment. Later, however, when lyophilized convalescent plasma was given intravenously

TABLE 2.—Observations in a Case of Appendical Peritonitis

Date	Hemoconcentration	Hemoglobin	Protein	Albumin	Albumin/Globulin	Chlorides	Carbon Dioxide		
5/27/41.....	47.5	15.5	7.0	4.4	1.7	550	54		
5/28/41.....	31.6	12.2	4.8	3.0	1.6	590	52		
Hemoglobin	Red Cells	Leukocytes	Myelocytes	Juveniles	Stab Cells	Segmented Cells	Lymphocytes	T. Polymorphonuclears	
5/27/41	10.5%	5,350,000	7,600	0	0	12%	63%	75%	25%

peristalsis returned even earlier and, in addition, its return was followed by the spontaneous evacuation of intestinal contents, occasionally at the end of eight and not infrequently within twenty-four hours after administration. Investigations by one of the members of our group to determine the cause of this early return of intestinal tonus showed that peritonitis induced in the dog by the method described³ is followed by a loss of plasma and blood volume with attendant loss of plasma protein and electrolyte. Dependent on the degree of loss of plasma there is an early increase in the concentration of the cellular elements of the blood. Fluid present in the peritoneal cavity contains large amounts of plasma protein and accounts for most of the loss of plasma. The most acute changes occur within twenty-four to seventy-two hours after operation. Following this critical stage of the infection there is an extended period of anemia.

In man, changes almost identical with those observed in the dog occur in the blood and the composition of the peritoneal exudate in perforative appendicitis and in the localizing process⁵—early appendical rupture quarantined by fibrinous plaques or mesentery, or loops of intestine cemented together with plastic exudate.

Table 1 shows not only the similarity of these changes but that pathologic changes of similar character in both man and dog evoke similar physiologic responses.

In patient E. K., with gangrene of the appendix, and in dogs 39 and 93, the total protein and albumin contents in the blood and peritoneal exudate were almost identical. In both dogs the process had gone one step further than in patient E. K.—the serous coat of the appendix had perforated but the process had been walled off with omentum and loops of intestine cemented together with plastic exudate—the localizing process.

The concentration of the cellular elements and the chemical changes in the blood and peritoneal exudate in the dog have been studied in detail and reported.⁶

Hemoconcentration with associated changes in the plasma protein is observed early in appendical peritonitis and is illustrated by the following:

J. M., a man aged 28, admitted with symptoms and signs of spreading peritonitis of seventy-two hours' duration, had a temperature of 103 F., a pulse rate of 106 and a respiratory

TABLE 1.—Physiologic Responses of Man and Dog with Similar Pathologic Conditions

Of Man	Pathologic Condition		Total Protein	Albumin	Albumin/Globulin	Chloride
B. S.	Acute catarrhal appendicitis	Blood.....	7.5	5.2	2.2	
		Peritoneal exudate	5.7	4.1	2.5	
E. K.	Appendix gangrenous, serous coat intact	Blood.....	7.0	4.5	1.8	575
		Peritoneal exudate	6.3	4.5	2.3	545
V. K.	Spreading peritonitis, perforating duodenal ulcer	Blood.....	6.6	3.7	1.3	605
		Peritoneal exudate	3.8	2.4	1.7	645
Of Dog						
No. 39	Appendix gangrenous, localizing process	Blood.....	7.1	4.1	1.4	670
		Peritoneal exudate	6.2	3.8	1.6	655
No. 93	Appendix gangrenous, localizing process	Blood.....	7.7	4.2	1.2	620
		Peritoneal exudate	7.0	4.2	1.5	620

Wright,⁵ Strumia, Wagner and Monaghan⁶ and Levinson, Neuwelt and Necheles⁷ have reported the therapeutic use of preserved plasma in the treatment of shock and infections.

2. Bower, J. O.: Clinical and Surgical Aspects of Spreading Peritonitis Complicating Acute Perforative Appendicitis, *Minnesota Med.* 23: 755 (Nov.) 1940.

3. Bower, J. O.; Burns, J. C., and Mengle, H. A.: Spreading Peritonitis Complicating Acute Perforative Appendicitis, *Experimental Studies*, *Arch. Surg.* 73: 751-759 (Nov.) 1938.

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rate of 28. Perforation had occurred four hours before admission. Despite septicemia produced by *Escherichia coli*, the patient recovered following the administration of 1,750 cc. of lyophilized peritonitis plasma.

COMMENT

The blood changes occurring in acute appendicitis and appendical peritonitis in man and dog are similar to those observed in shock. Blalock,¹⁰ in his investigation of the relationship of the local loss of fluid and low blood pressure, showed that the protein content of the fluid which accumulated and escaped through the wall of the intestine of dogs, accompanying shock induced by intestinal trauma, was practically identical with plasma. Patients suffering with the shock syndrome here described present a somewhat different picture from that which surgeons encounter in the terminal stages of a spreading peritonitis. Increased permeability of capillaries is a common accompaniment of shock and escape of fluids from damaged capillaries can be readily understood. Nerve impulses are believed by O'Shaughnessy and Slome¹¹ to play an important part in the causation of shock. The passage of fluid into the peritoneal cavity in cases of appendical peritonitis may be the result of absorbed bacterial antigens acting on terminal ganglions.

We have reported the finding of the antitoxin to *Clostridium welchi* in the peritoneal exudate of a patient operated on for a localizing process. The patient's blood serum also showed the presence of antitoxin to *Clostridium welchi*.¹²

We believe that the passage of fluid from the vascular system into the peritoneal cavity in preperforate appendicitis and appendical peritonitis is definitely a protective process. To view it otherwise, one must admit that the absence of peristalsis, the presence of plastic exudate between loops of intestine and omentum cementing them together or of antibodies in the blood stream are not protective. If these deductions are correct, then plasma taken from patients recovered from an attack of appendical peritonitis should have more therapeutic value than plasma taken from normal persons. Soon after we started using lyophilized plasma the full significance of the changes in blood composition became apparent. However, additional clinical and experimental investigations will be necessary to determine the relative therapeutic value of lyophilized convalescent peritonitis plasma as compared with lyophilized normal plasma. The following deductions regarding the results of our clinical experience with lyophilized convalescent peritonitis plasma to date may be helpful to those interested in this problem:

INDICATIONS AND CONTRAINDICATIONS FOR THE USE OF LYOPHILIZED CONVALESCENT PERITONITIS PLASMA

Plasma is indicated when a distended, purulent, gangrenous appendix ruptures at operation; when a perforated appendix is unexpectedly found at operation; when a frank spreading peritonitis is present on the patient's admission to the hospital; when an induced spreading peritonitis develops following the search for or removal of an appendix in the presence of a localizing process or an appendical abscess; when spreading peritonitis is induced postoperatively;¹ when peritonitis

develops as a result of ruptured duodenal, stomach or typhoid ulcers, perforation of the gallbladder, intestinal obstruction, salpingitis, abdominal trauma, and like conditions.

The initial amount given intravenously over a period of two hours has been 250 cc., except when an appendix ruptures on removal or for any other reason the patient has been subjected to an extremely large dose of antigen, under which conditions 500 cc. has been given. While the patient's pulse, temperature and the presence or absence of peristalsis are guides to further administration of plasma, protein determinations are also necessary and should be made ten hours after each dose. If symptomatic improvement does not occur, the dose should be repeated at twelve hour intervals until there is improvement. If there is no change in total protein and an improvement of symptoms continues, plasma is withheld.

In addition to plasma, the Fowler position, absolutely nothing by mouth, the parenteral administration of dextrose in saline solution or distilled water, depending on the level of plasma chloride, and morphine hypodermically are advised. Drugs that stimulate peristalsis should not be given at any time. Blood transfusions should not be given during the first forty-eight hours because of early hemoconcentration. Laboratory work will indicate later requirements.

Plasma is contraindicated for patients coming to operation with an unruptured appendix unless symptoms and signs of a peritonitis develop; for moribund patients unless the physician in charge believes that this type of patient should be "given a chance." Then a small blood transfusion is advised and, if the patient reacts, plasma may be administered, alternating with small transfusions. Facilities should be available for protein and hematocrit determinations.

OBSERVATIONS ON THE RESULTS OF THE ADMINISTRATION OF LYOPHILIZED CONVALESCENT PERITONITIS PLASMA

We have not observed as decided a psychic improvement from the administration of any agent in peritonitis as that which follows the intravenous injection of convalescent peritonitis plasma. We mention this first because in our experience it has been the initial change—patients voluntarily comment on how much better they feel. Restlessness and mental irritability diminish or disappear and delirium rarely develops.

Reduction in pulse rate and a drop in temperature are usually gradual in the case of severe involvement but not infrequently precipitous in the case of moderately severe involvement. In a previously silent abdomen peristaltic sounds have been heard as early as eight hours. Rigidity has diminished concomitantly in the quadrants in which peristalsis has returned.

We cannot state definitely the part that antibodies play in the improvement in symptoms and signs noted. The accurate replacement of fluids and electrolytes in quantities that approach as nearly as possible the patient's requirements is extremely important.

SUMMARY

Induced peritonitis in the dog produces tissue and body fluid changes similar to those observed in cases of appendical peritonitis in man, making possible the evaluation of agents used to combat the toxemia.

Preperforative appendicitis and appendical peritonitis in man and induced peritonitis in dogs show blood and body fluid changes similar to those observed in cases of shock.

10. Blalock, Alfred: Trauma to Intestines: Importance of Local Loss of Fluid in Production of Low Blood Pressure, *Arch. Surg.* **22**: 314 (Feb.) 1931.

11. O'Shaughnessy, Laurence, and Slome, David: Etiology of Traumatic Shock, *Brit. J. Surg.* **22**: 589 (Jan.) 1935.

12. Bower, J. O.: Spreading Peritonitis Complicating Acute Perforative Appendicitis: Routine Operations versus Scientific Management, *J. A. M. A.* **112**: 11-17 (Jan.) 1939.

The intravenous administration of lyophilized convalescent peritonitis plasma is advised in the treatment of patients suffering with appendical peritonitis.

The best management of these patients or of patients suffering with peritonitis from any cause can be carried out only with the aid of a competent clinical biochemist, on whose determinations the institution of therapy in great part depends.

Blood transfusions should be replaced by infusion of human plasma in the early stages of peritonitis.

The convalescent stage of peritonitis is accompanied by hypoproteinemia and anemia.

Lyophilized convalescent peritonitis pooled plasma makes immediate administration possible and diminishes the likelihood of reactions, and the lyophilization does not affect the specific antibody content of plasma.

CONCLUSION

A prophylactic plan for the reduction of the mortality of appendical peritonitis, which has proved workable in Pennsylvania, has been presented; we here suggest to surgeons a plan of management of this disease the rationale of which we believe to be sound.

NOSE DROP CONTAMINATION IN DROPPER BOTTLES

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What lurks in dropper bottles besides nose drops has long been a subject of discussion. By "dropper bottle" is meant the standard type of dropper attached, screw capped bottle wherein the dropper hangs submerged in the solution. The patient purchases a dropper bottle of solution of one of the common vasoconstrictors, treats his cold, then puts the bottle away in the family medicine cabinet. It is brought out thereafter when any member of the household has a stuffy nose. The dropper is inserted into the offending nostrils and is then put back into the bottle. Usually the dropper has been inserted well into the nostrils; therefore the questions arise of nose drops being a possible source of transmission of infection from one member of the family to another and of a future "cold" being complicated by the use of nose drops contaminated from a previous "cold."

Most persons would not think of borrowing another person's toothbrush, but perhaps nose drops in dropper bottles are cleaner than toothbrushes and won't support living bacteria. Therefore the following examinations of the contents of dropper bottles were made in the clinical laboratories of Peralta Hospital.

Eight unused, regularly prescribed dropper bottles of solutions for intranasal use were obtained from the hospital pharmacy (table 1). All solutions contained a preservative in small amount or were rich in aromatics. All were cultured aerobically and anaerobically and no growth appeared at the end of ninety-six hours. Fresh unused samples were then inoculated with twenty-four hour broth subcultures of *Staphylococcus aureus* hemolyticus and no growth appeared at the end of ninety-six hours, even after a second inoculation. Then rabbit blood-agar plates were inoculated with broth cultures of the same organism and four hours later, before a visible growth had occurred, the plates were

flooded with the solutions from dropper bottles. At the end of twenty-four hours a luxurious growth of *Staphylococcus aureus* appeared almost equal to the control plates that were not flooded with the solutions.

Thus it would appear that vasoconstrictor solutions in dropper bottles are probably sterile as dispensed by the pharmacist. Such solutions resist bacterial growth either by slight inhibition or by failure to provide sufficient nutrient material. As no bactericidal effect was demonstrated, lack of nutrient material is the more likely. Bacteriostatic effects were almost negligible.

Contents of dropper bottles known to have been used by one or more persons for at least one week were now examined. Nineteen samples were collected from as many medicine chests. Seven of these were commercial ephedrine solutions; twelve were of neosynephrin. All contained a preservative or aromatics. All yielded bacterial growth on culture (table 2).

Apparently repeated passage of the dropper from nostril to solution had succeeded in each instance in establishing bacterial growth. The explanation might be the addition of mucus, pus and debris to the solution as nutrient material, or it might be that bacteria continued to live within the added particles out of reach of the slight concentration of antiseptic in the surrounding solution.

As significant as any of these observations, however, and with the additional importance of probably supplying one answer to the problem, was the following:

Six samples from bottles containing physiologic solution of ephedrine without any antiseptic or dropper but with plain screw caps showed no bacterial growth on culture. These were bottles from separate medicine cabinets, and in all instances the contents had been partly used. But in no instance had a dropper been

TABLE 1.—Composition and Result of Culture of Unused Stock Solutions of Nose Drops as Dispensed

No.	Vasocon- strictor Agent	Vehicle	Preservative	Aromatics	Organism Found in Culture
1	Ephedrine 1%	Oil	Mertiolate 1:5,000	Oil of thyme, camphor, menthol	None
2	Ephedrine 1%	Oil	None	Camphor, menthol, wood turpentine, oil of eucalyptus, cedar leaf, thymol, methyl salicylate	None
3	Ephedrine 1%	Aqueous dextrose	Mertiolate 1:5,000	None	None
4	Neosynephrin 0.25%	Aqueous	Sodium ben- zoate 0.1%	None	None
5	Neosynephrin 0.25%	Aqueous	Sodium ben- zoate 0.1%	None	None
6	Neosynephrin 0.25%	Aqueous	Sodium ben- zoate 0.1%	None	None
7	Neosynephrin 0.25%	Aqueous	Sodium ben- zoate 0.1%	None	None
8	Ephedrine 1%	Aqueous dextrose	Metaphen 1:5,000	None	None

introduced into the bottle. In all instances portions had been removed only by unscrewing the cap, pouring out an amount needed for treatment and replacing the cap.

COMMENT

The question of sterility of solutions for intranasal use is important and there is an answer. The answer does not lie in avoiding the issue by the use of stronger

antiseptics. It lies in sterile solutions correctly dispensed and correctly used. Nor can medical practice make one grand effortless leap from the era of antiseptics to a new era of asepsis. Such change requires appropriate increases in education, instruction and care.

TABLE 2.—Composition of Nose Drops Examined and Organisms Found on Culture*

No	Vasoconstrictor Agent	Vehicle	Preservative	Aromatics	Organism Found in Culture
1	Ephedrine 1%	Oil	Merthiolate 1:5,000	Oil of thyme, camphor, menthol	Staphylococcus albus
2	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Streptococcus viridans, Staphylococcus albus
3	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Hemolytic Staphylococcus aureus
4	Ephedrine 1%	Aqueous dextrose	Merthiolate 1:5,000	Present, not itemized	Hemolytic Staphylococcus aureus
5	Ephedrine 1%	Aqueous dextrose	Chlorobutanol 0.5%	Menthol	Staphylococcus albus, Streptococcus gamma, Monilia albicans, M. catarrhalis
6	Ephedrine 1%	Oil	None	Camphor, menthol, wood turpentine, oil of eucalyptus, cedar leaf, thymol, methyl salicylate	Hemolytic Staphylococcus aureus, Streptococcus gamma
7	Ephedrine 1%	Aqueous dextrose	Metaphen 1:5,000	None	Staphylococcus aureus
8	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
9	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
10	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
11	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
12	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
13	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
14	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
15	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
16	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
17	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
18	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus
19	Neosynephrin 0.25%	Aqueous	Sodium benzoate 0.1%	Eucalyptol, menthol	Hemolytic Staphylococcus aureus

* All of these solutions were used at least one week.

Perhaps it does not make any difference to a person if he repeatedly uses his contaminated nose drops during that particular infection. But in his next cold the complicating organism may be a different one and the instillation of the first type of bacteria on a weakened mucous membrane may add to the patient's complications.

Staphylococci themselves may not cause actual disease of the upper respiratory tract if the mucous membrane is healthy; however, staphylococci may complicate another type of infection by synergistic action. The presence of staphylococci in nose drops may also indicate other contamination such as virus. No study was made of the possibility of virus growth in nose drops in this investigation. Surely it is a possibility that should not be overlooked.

In the series of samples tested, there were various preservatives and antiseptics used. These did not prevent bacteria from living in the nose drops. If a sufficient concentration of preservative or antiseptic was added to keep the drops sterile, the drops would be irritating and harmful to the mucous membrane of the nose.

The main purpose of this paper is to condemn two practices that are widespread among the public and are at times fostered unintentionally by physicians. These are (1) the use by a patient of some one else's dropper bottle of nose drops and (2) the use by a patient of dropper bottle nose drops that he has used during a previous infection of the upper respiratory tract.

In order to avoid the complications of these practices, the physician should educate his patients to do one of two things: If they insist on buying dropper bottles of solution, they should buy very small ones, allow no one else to use them and throw them away at the conclusion of their current infection.

However, the safer and better method is to buy sterile nose drops containing no antiseptic, in a plain screw cap bottle. Instruction is given to pour out the amount needed for treatment and replace the screw cap at once, never pour anything back into the original bottle and never put a dropper or anything else into it. This is the practice advocated by Parkinson.¹

Even with the few instances involved in this investigation, certain conclusions can be drawn that are highly significant in relation to present customs of dispensing and using vasoconstrictor solutions for intranasal application.

SUMMARY

1. Fresh nose drops as they are dispensed are probably sterile.

2. The usual content of preservative or antiseptic is insufficient to maintain sterility in the face of repeated contamination.

3. Many popular intranasal vasoconstrictor solutions have no bactericidal effect on Staphylococcus aureus hemolyticus.

4. Repeated contamination of nose drops results in their supporting living bacteria. This probably is due to the addition of mucus and other debris from the nose.

5. The use of contaminated dropper bottle contents by others, or in subsequent colds, is not without risk.

6. Since sufficient antiseptic to insure sterility under circumstances of repeated contamination would make a solution unfit for intranasal use, owing to discomfort and mucosal irritation and damage, the way to progress would seem to be toward solutions prepared, sold and used in such manner as to avoid contamination.

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1. Parkinson, S. N. Preparation of a Physiologic Solution for Nasal Treatment. Arch. Otolaryng. 32:959 (No. 1) 1940.

THE GRID FOR EVALUATING PHYSICAL FITNESS (WETZEL)

APPLICATION TO CHILDREN WITH ABNORMAL BODILY DIMENSIONS

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In a recent publication Wetzel¹ described a new method for evaluating physical fitness which permits the estimate of different aspects of the physical progress of a child from infancy to maturity. The assessment is based on the use of a grid and demands only three simple routine measurements, namely height, weight and age. Wetzel enumerates eight different items which may be determined from the grid: physique (body build), developmental level, nutritional grade, physical status, relative advancement or retardation, maturation, basal heat production and daily caloric intake. The technic is described in detail in the original publication and will not be repeated in this paper. The different aspects are explained by illustrative examples. Yet no examples are given which show the interrelation of the different aspects in the same individual, specifically not in individuals with abnormal bodily dimensions.

The present report is intended to illustrate the application of the grid to children in whom one or more of the basic measurements is distorted. Since in this department records of more than 200 obese children, with relevant measurements, are available, the discussion will concern itself chiefly with findings in obese children. Cases of pronounced undernutrition and of retardation or acceleration of statural growth are included for contrast. The value of the method for recognition of abnormal physical status and for evaluation of therapeutic results could be confirmed. However, some limitations of the method, which were not clarified in the original report, have been observed. For simplification the eight aspects recorded by Wetzel will be discussed under three different headings: (1) height-weight relationship (including physique, nutritional grade and physical status), (2) developmental achievement (including developmental level, relative age advancement or retardation and maturation) and (3) basal metabolism (basal heat production and daily caloric intake).

HEIGHT-WEIGHT RELATIONSHIP

The construction of the grid permits the recording of height and weight by a single point. The area of normal progress is divided into several channels. If subsequent measurements follow the course of one of the established channels it may be concluded that the child is healthy and is progressing normally. The body build of a child determines the particular channel along which his growth line progresses. Abnormal increase in weight expresses itself in an upward trend of the line, or deviation toward the left. Malnutrition is indicated by a lowering of the line, or a bending toward the right side of the grid. Wetzel describes extensively the usefulness of the grid for the early detection of developing obesity or malnutrition. The value of the new method could be fully confirmed in

a large group of children with abnormal nutritional status. The graphic registration on the grid appears to be of particular value in detecting sudden changes in the height-weight relationship and will thus lead to an early investigation of the disturbing factors.

By plotting a number of cases which had been followed for several years, the value of the grid for a quick evaluation of the result of treatment could be demonstrated. Since obesity generally requires long-continued supervision and since a certain increase in weight is to be expected in a growing child, the appraisal of the progress of an obese child is sometimes difficult. It is only in the decidedly overweight child that actual reduction of weight is indicated. In less severe cases it may be sufficient to keep the weight stationary or even to allow a slight increase in weight. By transferring the figures to the grid, one can readily recognize whether or not a child is outgrowing his obesity. A slope of the line smaller than the slope of the grid indicates satisfactory progress and improvement of the condition. A parallel curve of the line or a slope larger than that of the grid is an index that the condition is stationary or is becoming worse. The grid thus offers a convenient guide for the evaluation and adjustment of treatment in children with abnormal nutrition.

DEVELOPMENTAL ACHIEVEMENT

The channels indicating height and weight progress are subdivided by so-called developmental lines. These lines are related to standard schedules of developmental progress ("auxodromes"). Comparison of the developmental level of a subject to the 67 per cent (or normal) auxodrome permits, according to Wetzel, a "simple, entirely objective," way of determining "developmental age." This measurement is claimed to be comparable to the skeletal age. Wetzel emphasizes that the new method avoids the disadvantages connected with roentgenographic determinations of skeletal age. However, he gives no figures which demonstrate the validity of this claim in children with abnormal bodily dimensions. A comparison of the developmental level, determined from the grid, and of the skeletal age, as measured by the traditional roentgenographic method, must show a good agreement before one is justified in replacing a well established, though tedious, method by a new and simpler one.

The accompanying tables show the result of such a comparison. Table 1 lists observation in 25 obese boys, and table 2 in 20 obese girls. The figures are intended to give the range of variation with regard to age and degree of obesity. The first difficulty in rating the patients according to the grid technic arises from the circumstance that many of the older and decidedly obese children fall outside the range which can be assessed from the grid. There are only 2 girls of more than 9 years who could be included; they were the shortest obese girls of this age period. The values of all other obese girls of more than 10 years fell above the developmental line 147, which is the highest value which may be related to the 67 per cent or normal auxodrome. Many of the older boys had also to be rejected because their height and weight gave them a developmental level above 170, which is approximately the highest value which can be expressed as developmental age.

In tables 1 and 2 are recorded the age, height and weight of the children together with their skeletal age. The assessment of the skeletal age was made from

From the Department of Pediatrics, Columbia University College of Physicians and Surgeons.
1. Wetzel, N. C.: Physical Fitness in Terms of Physique, Development and Basal Metabolism, *J. A. M. A.* 116: 1187 (March 22) 1941.

roentgenograms of the hands and wrists according to the standards of Todd.²

The "developmental age" was assessed according to Wetzel's description as the age that corresponds to the 67 per cent auxodrome. "Height age" was similarly determined by plotting the height in the median channel and referring it from there to the 67 per cent auxodrome. The figures for height age enclosed in parenthesis have

than twice the value of the observed skeletal age. The discrepancies between the different determinations is illustrated in chart 1. The abscissa refers to the chronologic age, the ordinate refers to height age, skeletal age and developmental age, each of which is plotted above the chronologic age for each child. The 45 degree line indicates equality between chronologic age and the determined growth achievement. The majority of

TABLE 1.—*Obese Boys*

Number	Initials	Age		Height, Inches	Weight, Pounds	Skeletal Age		Calculations from Wetzel's Grid						Difference (Development Minus Height)	
		Yr	Mo			Yr	Mo	Per Cent Over- weight	Height Age		Developmental Age		Yr	Mo	
									Yr	Mo	Yr	Mo			
1	R S	1	6	35	54	1	9	80	(2	2)	7	2	5	0	
2	S B	2	3	38	51	2	9	50	(3	1)	7	2	4	1	
3	S G	2	11	39½	47	3	0	37	(3	9)	6	8	2	11	
4	G S	3	6	42	50	4	3	32	(4	8)	7	3	2	7	
5	C C.	3	9	41¾	53	3	3	43	(4	6)	7	7	3	1	
6	C. L	4	10	47½	74	5	9	42	7	9	10	10	2	5	
7	F D	5	1	46	62	6	0	35	6	11	9	1	2	3	
8	T A	5	4	45½	63	5	9	37	6	10	9	3	2	7	
9	J S	5	10	48½	74	7	0	40	8	2	10	9	2	7	
10	N K	6	5	48	88	6	0	69	7	10	12	6	4	8	
11	R L	6	6	47½	76	8	0	49	7	7	11	2	2	6	
12	L B	6	8	48½	74	6	9	37	8	3	10	9	4	10	
13	C R	7	7	47½	81	6	9	56	8	7	12	3	3	3	
14	H G.	7	7	48½	80	7	0	51	8	2	11	5	1	6	
15	F C	8	3	53¾	84	9	9	20	10	9	12	6	1	0	
16	J H	8	3	57½	102	9	9	20	12	4	14	4	2	0	
17	W H	8	6	57	118	8	9	40	12	4	13	2	2	2	
18	F. B	9	6	54¾	96	10	9	33	11	0	13	9	1	6	
19	S F	9	8	56½	106	9	9	26	12	3	13	2	3	8	
20	D B	9	9	51	97	9	3	36	9	6	17	2	2	8	
21	J. C	10	1	56	120	10	9	48	12	0	14	8	1	7	
22	W D	10	6	52	95	11	3	23	11	7	13	2	4	0	
23	H. P.	11	6	57	148	12	3	74	12	6	16	6	0	10	
24	A H.	11	7	57½	101	12	3	17	12	8	13	6	0	6	
25	J. P	13	5	61¾	154	14	3	45	14	0	17	6	0	6	

TABLE 2.—*Obese Girls*

Number	Initials	Age		Height, Inches	Weight, Pounds	Skeletal Age	Calculations from Wetzel's Grid			Difference (Development Minus Height)	
		Yr	Mo				Per Cent Over weight	Height Age	Developmental Age		
						Yr				Mo	Yr	Mo	Yr	Mo
1	A Y	2	.	37½	33	2	3	61	(3 0)	7 6	4 6
2	E. K.	2	9	39½	49	3	3	40	(3 9)	7 2	3 5
3	S. B	2	9	38½	49	3	3	44	(3 6)	7 0	3 6
4	T. S	3	1	41½	69	4	6	87	5	9 8	4 8
5	D R	3	5	39¾	51	3	3	46	(3 10)	7 3	3 6
6	A K.	4	6	43¾	75	5	3	88	6	10 9	4 9
7	F S	5	0	45¼	97	6	3	115	6 9	12 6	5 9
8	M S.	5	2	44	56	6	6	57	6 2	8 2	2 0
9	Z. F.	5	5	43½	73	7	3	87	5 10	10 6	4 8
10	F. P.	6	1	49½	81	7	6	45	8 9	11 7	2 10
11	H. W	6	8	47	67	8	0	34	7 6	9 6	2 0
12	G. B	6	10	48¼	113	9	0	109	8 9	11 9	5 9
13	A. C	7	1	51¾	95	10	6	46	9 9	12 8	2 11
14	M R.	7	2	54½	103	9	0	39	11 3	13 4	2 1
15	H E	7	9	53½	104	10	9	48	10 8	13 6	2 11
16	A. T	8	2	50	97	9	9	67	8 10	12 9	3 11
17	A. S	8	6	48¼	72	8	9	33	8 0	10 0	2 0
18	M. B.	8	10	50	76	8	9	31	8 10	11 2	2 4
19	J. F.	9	7	52	105	12	3	67	9 6	13 6	4 0
20	B. F	10	6	52	97	10	6	37	9 6	12 6	3 0

been assessed from the height charts of Burgess³ because the values fell below the range of the 67 per cent auxodrome. "Per cent overweight" refers to the difference between observed weight and expected weight, the latter being taken as the weight which, according to the grid, corresponds to the height in the median channel.

A glance at tables 1 and 2 shows that little agreement exists between the "skeletal age," according to the roentgenographic method, and the "developmental age," according to the grid. In all instances the developmental age gives a much higher value, sometimes more

values fall above this line, indicating accelerated physical development in obese children.⁴ The values for height and skeletal age fall generally within two or three years of the chronologic age. The height development is on the average somewhat more accelerated than the skeletal maturation. But the two values fall within the same zone, indicating a proportional acceleration of development in obese children.

The values for "developmental age" calculated according to the grid lie well above the values for height and skeletal development and are out of proportion with the actual biologic development of the child. The discrepancy is the more pronounced the higher the per-

2. Todd, T. W.: *Atlas of Skeletal Maturation*, St. Louis, C. V. Mosby Company, 1937.

3. Burgess, M. A.: Construction of Two Height Charts, *J. Am. Statist. A* 32: 290, 1937.

4. Bruch, Hilde: Physical Growth and Development of Obese Children, *J. Am. Dis. Child* 58: 457 (Sept.) 1939.

centage of overweight. The dependence of the excessively high value for developmental age on the weight excess is illustrated in chart 2. On this chart the percentage overweight is plotted against the difference between developmental age and height age. The direct relationship between the excessively high value

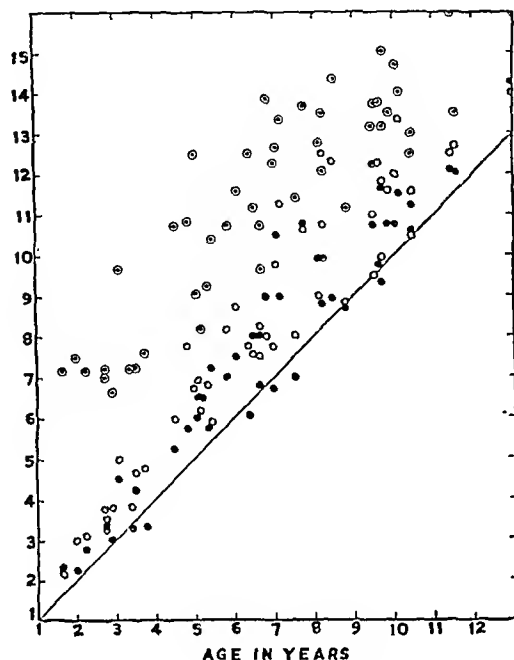


Chart 1.—Relation between chronologic age, skeletal maturation and "developmental age" (Wetzel) in obese children: The abscissa indicates chronologic age in years, the ordinate the achievement in different growth phases. The 45 degree line indicates equality (normal development) between chronologic and achievement age. Skeletal age is represented by solid dots, height age by open circles, and developmental age by circles with a center dot.

for developmental age and the excessive weight is obvious. The deviation from the height age, and not the skeletal age, was chosen for comparison because both the height and the developmental age, and also the weight excess, were calculated from Wetzel's grid. These three values are therefore directly comparable. The deviation from the skeletal age would show somewhat higher values; yet the relationship to the weight excess would be very similar.

Further observations were made in nonobese children with other distortions in height or weight development. They are presented in table 3. Cases 1 and 2 represent 2 tall and thin children, both of whom have a normal skeletal age. The rating on the grid gave them too low a developmental age. In the third case (table 2) the height development is so excessive that it compensates for the low weight and leads to too high a value for developmental age. This child also has a normal skeletal age.

Two abnormally short patients are presented as cases 4 and 5. In these patients the height-weight relationship is normal; therefore the height age and developmental age from the grid show good agreement. Yet the skeletal age was in 1 case below and in the other above the value assessed from the grid.

Finally, figures are given for 2 girls with hypothyroidism who had been inadequately treated. Both were short but of stocky body build. In both cases

the rating from the grid gave a developmental age in excess of the actually observed skeletal age.

The examples of tables 1, 2 and 3 were taken at random from a large group of children with some abnormal bodily dimension, who had been extensively studied. In no case did the "developmental age" according to the grid agree with the assessment of the skeletal age, according to the roentgenologic determination. The "developmental age," distorted by the inclusion of the abnormal dimension, gives too high or too low a value. Wetzel's claim that the "developmental age" may serve the same purpose as the skeletal age could not be verified in these 52 children. Yet it is in children of this type that the correct assessment of the developmental achievement is of diagnostic and prognostic importance.

Many of the children in tables 1, 2 and 3 have been followed for several years. Their subsequent puberal development has confirmed the value of the skeletal age for arriving at a fairly accurate prediction of further development. In none of these cases would the assessment of the "developmental age" have given a reliable prediction about the time of maturity.

BASAL METABOLISM

The heat production scale of the grid is given in conjunction with the developmental levels. Since the developmental levels were found to be directly influenced by the abnormal bodily dimension, it is obvious that the same must be expected for the prediction of basal metabolism, in contrast to the claim that "the present method offers the encouragement that clinical distinction between normal and abnormal states of metabolism can be made with greater accuracy and less uncertainty than before" and "without correcting for body size, physique or age." This statement may hold true for normal children; it could not be validated for children with abnormal bodily dimensions. The same problems which apply to the use of other standards arise also with the diagnostic application of the new standards.

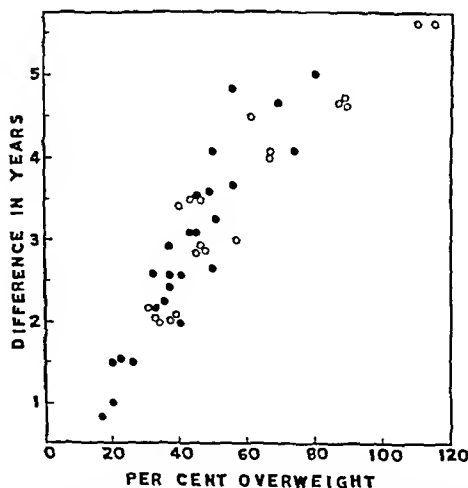


Chart 2.—The relationship between degree of obesity and the excessive value for developmental age: The abscissa indicates the weight excess in percentage, the ordinate the difference between developmental age and height age. All these values were calculated from the grid. Values for boys are represented by solid dots, for girls by open circles.

In tables 4 and 5 are presented observations on 20 obese boys and 20 obese girls who were chosen at random (with the exception that a number of patients fell outside the given scale). The observed caloric

output is given in comparison to the predictions from Wetzel's new standards and Talbot's weight standards.⁵ The correlation coefficient between the two predictions is very high, namely 0.95. Both standards give too high predictions for very young children. There is no reason to suppose that the deviation in these young children is an expression of abnormal metabolism any

standards were observed. The correlation coefficient between the two standards was higher than that between each standard and the observed calories (0.81 and 0.77 respectively). One may conclude that in obese children the abnormal dimension (the excessive weight) enters into the calculation of the basal metabolism and cannot be disregarded.

TABLE 3—Nonobese Children

Number	Initials	Sex	Calculations from Wetzel's Grid											Observed Calories	
			Age		Height, Inches	Weight, Pounds	Skeletal Age		Per Cent Difference in Weight	Height Age		Develop- mental Age			Calories
			Yr	Mo			Yr	Mo		Yr	Mo	Yr	Mo		
1	R V A	♂	12	10	60	70	12		-27	13	4	10	9	1,200	1,794
2	H W	♂	12	3	60	76	12		-25	13	6	11	3	1,170	1,794
3	T R	♂	10	3	63½	85	10		-26	12	6	12	8	1,230	1,400
4	J C	♂	7	2	40½	36	3	6	0	5		5		820	912
5	M G	♂	13	10	54½	80	13		+8	11	2	12			
6	S C	♂	8	2	38	40	4	5	+20	3	2	3	6	840	578
7	R P.	♂	10	5	42	48	4	6	+40	5	3	6	9	935	714

TABLE 4—Obese Boys

Number	Initials	Age		Height, Cm	Weight, Kg	Per Cent Overweight	Calories Predicted		Calories Observed	Percentage Deviation from	
		Yr	Mo				Wetzel	Talbot		Wetzel	Talbot
1	R P	5	5	125	29.1	14	1,160	1,130	1,090	- 6	- 4
2	P R	5	7	118	34.1	59	1,230	1,230	904	-21	-21
3	O'C	6	7	128	30.7	52	1,340	1,250	1,242	- 7	- 8
4	M N	6	9	126	33.5	30	1,220	1,200	1,135	- 7	- 6
5	L R	6	11	126	30.8	19	1,185	1,155	1,238	+ 5	+ 6
6	O'G	7	5	128	41.2	54	1,345	1,360	1,222	- 9	-10
7	H M.	7	10	133	41.0	30	1,340	1,355	1,182	-22	-17
8	S S	8	11	132	38.5	30	1,310	1,310	1,310	0	0
9	D B	8	9	131	43.5	59	1,380	1,390	1,235	-11	-11
10	J N.	8	11	144	41.9	15	1,550	1,270	1,590	+ 3	+16
11	A L	10	2	138	44.9	33	1,400	1,410	2,592	- 1	- 1
12	H P	10	6	142	57.5	62	1,540	1,390	1,432	- 6	- 9
13	H L	10	9	143	54.4	50	1,510	1,500	1,755	+16	+13
14	M M	11	4	155	54.6	17	1,520	1,530	1,608	+ 6	+ 4
15	S T	11	9	166	62.7	12	1,610	1,700	1,590	- 1	- 6
16	G T	11	9	148	66.4	62	1,630	1,760	1,470	-10	-17
17	J P	12	1	151	58.0	37	1,550	1,600	1,555	0	- 3
18	S S	12	6	150	52.5	25	1,500	1,390	1,370	- 9	-10
19	S R	12	7	150	55.0	31	1,520	1,505	1,538	+ 1	- 2
20	T P	13	2	147	67.2	70	1,640	1,700	1,632	0	- 7

TABLE 5—Obese Girls

Number	Initials	Age		Height, Cm	Weight, Kg	Per Cent Overweight	Calories Predicted		Calories Observed	Percentage Deviation from	
		Yr	Mo				Wetzel	Talbot		Wetzel	Talbot
1	S B	4	5	114	25.1	44	1,055	1,020	848	-20	-15
2	M E	5	1	113	24.1	28	990	945	890	-10	-9
3	G B	6	10	128	50.4	94	1,320	1,400	1,478	+12	+6
4	A C	7	1	112	41.3	40	1,230	1,210	1,400	+14	+11
5	G F	7	5	125	37.4	50	1,190	1,230	1,104	-7	-14
6	M B	8	6	127	34.0	27	1,140	1,140	1,188	+4	+4
7	G G	8	7	131	37.7	30	1,200	1,260	1,110	-6	-8
8	O B	8	9	131	37.7	30	1,200	1,260	1,110	-6	-8
9	B G	9	2	131	49.0	24	1,210	1,265	1,285	+7	+7
10	E B	9	3	147	44.1	29	1,320	1,370	1,275	+3	+5
11	A B	9	6	140	44.1	29	1,270	1,310	1,410	+11	+11
12	E C	9	6	146	60.2	55	1,410	1,555	1,278	0	-7
13	A C	9	6	142	52.4	46	1,345	1,435	1,445	+1	0
14	S G	9	6	144	41.0	12	1,250	1,260	1,235	+1	+6
15	J F	9	7	114	46.6	51	1,290	1,340	1,432	+6	+4
16	B F	10	5	144	33.2	24	1,260	1,300	1,355	+5	+1
17	R B	10	8	153	34.5	35	1,375	1,465	2,420	+2	-1
18	R K	11	4	144	49.3	35	1,320	1,390	1,550	+3	-1
19	M H	11	7	150	48.2	14	1,320	1,375	2,294	-2	-9
20	J F	11	9	148	59.0	48	1,410	1,530	1,388		

more than to conclude that the agreement in the older children between the observed calories and both Wetzel's and Talbot's weight standards is necessarily an expression of normal metabolism. Wetzel's standards gave a slightly better result in an unusually tall boy (case 10, table 4) and in a rather short but very heavy boy (case 16, table 4). No other conspicuous differences between the predictions from these two

standards were observed. The correlation coefficient between the two standards was higher than that between each standard and the observed calories (0.81 and 0.77 respectively). One may conclude that in obese children the abnormal dimension (the excessive weight) enters into the calculation of the basal metabolism and cannot be disregarded.

In the 2 hypothyroid patients (cases 6 and 7, table 3) the prediction from the grid was higher than the observed calories. In these 2 patients the interpretation

⁵ Talbot, F. B. Basal Metabolism Standards for Children, *Am J Dis Child* 55:455 (March) 1948

of the observed metabolism as "low" may be justified but only because the retarded skeletal age (supported by the clinical history and other findings) points to hypothyroidism as the underlying disturbance. The assessment of the "developmental level" from the grid, which was found to be higher than the height age, would not have permitted this diagnostic conclusion. The other customary standards give also a low rating in these children with true hypothyroidism.

SUMMARY AND CONCLUSION

1. The grid for evaluating physical fitness (Wetzel) was applied to 52 children with abnormal bodily dimensions. The usefulness of the new method for the graphic recording and early recognition of abnormal changes in the height-weight relationship could be confirmed. The grid appears to be of value for the appraisal of therapeutic results.

2. The relative advancement or retardation of statural growth ("height age") can be readily assessed with the aid of the auxodromes.

3. The assessment of the "developmental age" from the combined height and weight value was found to show no agreement, in any instance, with the roentgenographically determined skeletal age. Clinical observation has proved the skeletal age to be fairly reliable for the prediction of the future development and maturation.

4. The deviation of the "developmental age" could be directly related to the abnormal physical dimension. The assessment of the "developmental age" from the grid leads to an unreliable prediction of maturation.

5. Since the standards for basal metabolism predictable from grid readings are alined to the developmental levels the same limitations apply to them. They also are influenced by the abnormal bodily dimension and should not be used for the assessment of abnormal metabolic states without correction for and consideration of the abnormal dimension.

6. It was considered necessary to point out the limitations of the new method in order to bring into clearer relief the true usefulness of the method. It is to be expected that the application of the grid in public health work, school examinations and so on will render valuable service in screening out children with abnormal body proportions and disturbances in developmental progress. For the diagnosis, however, of the underlying disturbance in such children, and for the prediction of future development and maturity, the assessment of "developmental age" and also of basal metabolism from the grid offers only unreliable information.

Johns Hopkins Hospital.

FATAL PULMONARY EMBOLISM FOLLOWING VARICOSE VEIN INJECTION

REPORT OF A CASE AND REVIEW
OF THE LITERATURE

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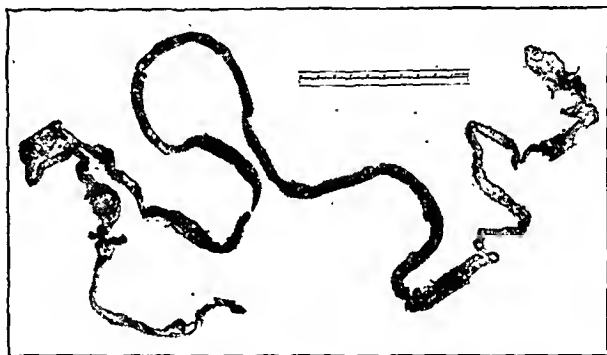
AND

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CHICAGO

Within the past two decades the obliteration of varicose veins by the injection of sclerosing solutions has become an accepted form of treatment. This may be associated, however, with a certain amount of danger, regardless of the fact that it is being and has been employed daily in the treatment of thousands of patients with no resulting serious complications. Serious reactions to the injection of sodium morrhuate have been encountered by Lewis,¹ Dale² and McCastor,³ as noted in a previous publication by one of us.⁴



Pulmonary embolus from the left common iliac vein.

In the case reported, death was proved to be due to pulmonary embolism. While this is undoubtedly the most serious complication to be feared, it is possible that allergy to sodium morrhuate plays a role in some of the reactions observed. This could conceivably be related to an acquired sensitivity from the previous administration of cod liver oil. For this reason it is important to question the patient concerning asthma, hay fever or other manifestations of allergic predispositions, as well as concerning previous sodium morrhuate injections. In addition to this a sensitivity test with sodium morrhuate should be made or a small initial injection given.

Our aim in this paper is to show that a fatal complication may occur unless certain precautions are taken. The case report and a review of the fatal cases reported by other clinicians may help to prevent this tragic sequel to a popular method of treatment. It is probable that more fatal cases have occurred but have not been reported.

From the Department of Surgery, Mercy Hospital and Loyola University School of Medicine.

1. Lewis, Kenneth M.: Anaphylaxis Due to Sodium Morrhuate, *J. A. M. A.* 107:1298 (Oct. 17) 1936.

2. Dale, Maurice L.: Reaction Due to Injection of Sodium Morrhuate, *J. A. M. A.* 108:718 (Feb. 27) 1937.

3. McCastor, J. T. N., and McCastor, Mary C.: Reaction to Sodium Morrhuate Injections for Varicose Veins and Hydrocele, *J. A. M. A.* 109:1799 (Nov. 27) 1937.

4. Vaughn, Arkell M.: Varicose Veins, *Illinois M. J.* 78:137, 1940.

Insurance Against Misuse of Science.—It is a stimulating challenge to have others say that there is too much science in the world. It is my opinion that we have too little of the scientific spirit in those who use the discoveries of science! We create machines and they are allowed to exploit people. Every tool and machine should have a tag attached as when a mechanic finishes greasing your car at the garage. The tag should say that you last looked at the social effects of the tool three months or three years ago and that it is time to have another look. Society should require insurance against misuse—for everything that science is and means is wrapped up in its effect on men. Human beings are at the center of it all. Not the thousand and one laboratories and "things" that science produces but rather their social effects are what concern us.—Bowman, Isaiah: Enduring Purpose, *Assn. Am. Coll. Bull.* 26:195 (May) 1940.

REPORT OF CASE

Miss J. T., aged 65, was admitted to the outpatient department of the Mercy Hospital Free Dispensary on March 24, 1936 with a history of varicose ulcers on the left leg and swelling of the left ankle for the past five weeks. The present illness dates back to 1926, at which time she was hospitalized for five weeks because of ulcers of the left leg which evidently

rate 88, the respiratory rate 18 and the blood pressure 140 systolic and 95 diastolic. General physical examination was negative except for a soft, moderately low pitched, apical systolic murmur. The essential pathologic condition was a shallow, tender ulceration the size of a 25 cent piece (24 mm.) over the anterior part of the tibia at the junction of the middle and lower thirds of the left leg, which oozed serum and pus and

TABLE 1.—*Reported Cases of Fatal Pulmonary Embolism Following the Injection Treatment of Varicose Veins*

No.	Author	Year	Solution Used	Amount	Ambulatory; Bedridden	Result	Time After Injection
1	Hohlbaum ⁵	1922	Pregl's isotonic iodine solution	80 cc.	.....	Died	14 days
2	Linser: München. med. Wchnschr. 71: 418, 1924	1924	Sodium chloride	.....	Ambulatory	Died	14 days
3	Hirsch and Nobl: Wien. klin. Wchnschr. 39: 1310, 1926	1926	Dextrose 60%	.....	Bedridden following hemorrhoidectomy	Died	42 days
4	Lomholt: Ugesk. f. læger 89: 7, 1927....	1927	Sodium chloride 20%	25 cc.	.....	Died	28 days
5	Olson ⁶	1927	Sodium chloride 25%	50 cc.	Ambulatory	Died	10 days
6	Kühnau: Zentralbl. f. Chir. 56: 2580, 1927	1927	Dextrose 50%	40 cc.	.....	.....	.....
7	Leval: Monatsschr. f. ungar. Med. 1: 201, 1927	1927	Calorose	.....	Ambulatory	Died	5 days
8	Schoenhoff, cited by Lomholt: Ugesk. f. læger 89: 718, 1927	1927	Sodium chloride 15%	.....	Bedridden following hemorrhoidectomy	Died	28 days
9	von Eiselberg, cited by Moszkowicz: Wien. med. Wchnschr. 77: 46, 1927	1927	Sugar solution	.....	Bedridden from excision and ligation of varicose veins	Died	10 days
10	Faure, cited by Vigyazo: Zentralbl. f. Chir. 55: 70, 1928	1928	.....	.....	.....	Died	.....
11	McPbecsters and Rice ⁷	1928	Sodium chloride 20%	90 cc.	Bedridden following excision and ligation of vein	Died	20 days
12	Kilbourne ¹⁰	1929	Sodium salicylate	.....	Ambulatory; massage of thrombosed vein	Died	42 days
13	Ansehutz-Loehr: Zentralbl. f. Chir. 56: 3211, 1929	1929	Sodium chloride 20%	15 cc.	.....	Died	.....
14	Ansehutz-Loehr: Zentralbl. f. Chir. 56: 3211, 1929	1929	Sodium chloride 25%	25 cc.	Bedridden	Died	10 days
15	Oehlecker: Zentralbl. f. Chir. 57: 1122, 1930	1930	Sodium chloride 20%	.....	Bedridden following vein ligation	Died	Few days
16	Silverman ⁹	1931	Sodium chloride 25%	25 cc.	Bedridden with thrombophlebitis	Died	10 days
17	Horn and Foged: Mitt. a. d. Grenzgeb. d. Med. u. Chir. 42: 17, 1931	1931	Inversal, varicosmon	Total 57 cc.; 7 injec. in 5 wks.	.....	Died	15 minutes after last injection
18	Federhen: Ztschr. f. med. Beamte 44: 289, 1931	1931	Calorose 60%	.....	.....	Died	.....
19	Behring: Svenska läk.tid. 29: 457, 1932...	1932	Quinine, urethane	.....	.....	Died	.....
20	Matas: Ann. Surg. 96: 691, 1932.....	1932	Quinine, urethane	.....	.....	Died	.....
21	Spilsbury: J. A. M. A. 98: 1754, 1932.....	1932	Sodium salicylate	.....	.....	Died	.....
22	Spilsbury: J. A. M. A. 98: 1754, 1932.....	1932	Sodium salicylate	.....	.....	Died	.....
23	Spilsbury: J. A. M. A. 98: 1754, 1932.....	1932	Sodium morrhuate	.....	.....	Died	.....
24	Spilsbury: J. A. M. A. 89: 1754, 1932.....	1932	.....	.....	Bedridden	Died	7 days; tubular clot in heart
25	Krauss: Zentralbl. f. Chir. 60: 2126, 1933	1933	Vnricosmon (concentrated sugar sol.)	.....	Bedridden	Died	21 days after injection, 9 days after patient put to bed
26	Stoner: Am. J. Surg. 25: 148, 1934.....	1934	Invertose	.....	.....	Died	14 days
27	Westerborn ¹¹	1937	Quinine, urethane	.....	.....	Died	12 days
28	Westerborn ¹¹	1937	Varison	.....	.....	Died	21 days
29	Westerborn ¹¹	1937	Varison	2 cc.	.....	Died	50 days
30	Westerborn ¹¹	1937	Quinine, urethane (varison)	.....	.....	Died	2 days
31	Westerborn ¹¹	1937	Quinine, urethane	.....	.....	Died	40 days
32	Westerborn ¹¹	1937	Quinine, urethane	3.5 cc.	.....	Died	7 days
33	Westerborn ¹¹	1937	Quinine, urethane	4 cc.	.....	Died	10 days
34	Westerborn ¹¹	1937	Quinine, urethane	10 cc.	.....	Died	35 days
35	Westerborn ¹¹	1937	Quinine, urethane	2 cc.	.....	Died	21 days
36	Westerborn ¹¹	1937	Quinine, urethane	.....	.....	Died	18 days
37	Westerborn ¹¹	1937	Quinine, urethane	.....	.....	Died	50 days
38	Homans ¹²	1937	.....	.....	Bedridden	Died after ligation	.....
39	Homans ¹²	1937	.....	.....	Bedridden	Died after ligation	.....
40	Homans ¹²	1937	.....	.....	.....	Died after ligation	.....
41	Dean and Dulin ¹³	1940	.....	.....	.....	Died	.....
42	Dean and Dulin ¹³	1940	.....	.....	.....	Died	.....
43	Nunn and Harrison: J. A. M. A. 117: 347, 1941	1941	Sodium morrhuate	Total 4 cc. in 6 days	Ambulatory	Died	6 weeks
44	Vaughn and Lees	1941	Sodium morrhuate	Total 7.5 cc.; 5 injec. in 23 days	Bedridden	Died	21 days after 1st, 5 days after last injection

completely healed, and she remained symptom free until five weeks prior to the present hospital admission. Aside from this condition the patient had always been in good health and had been able to carry out her duties as a room cleaner, which involved considerable walking and standing. Her father died of a heart attack, her mother of pulmonary tuberculosis and one brother from a "stroke."

Physical examination revealed that the patient was fairly well developed but poorly nourished, intelligent, alert and apparently not in any distress. Her temperature was 99.2 F., the pulse

was surrounded by a reddish blue indurated area of skin. Over the popliteal and patellar regions there was a similar area of reddish blue unbroken skin the size of an elm leaf. The veins in the left leg were enlarged and tortuous. Neurologic examination was negative.

Urinalysis and blood counts were within normal limits, and Wassermann and Kahn tests were negative.

The patient was referred to the Department of Dermatology, where a diagnosis of varicose ulcer and veins was made, and she was then referred to the Department of Surgery for treat-

ment. On March 28, 2 cc. of 5 per cent sodium morrhuate was injected into a varicose vein just proximal to the ulcer and the ulcer dressed with Peruvian balsam. Evidently the ulcer did not improve and on April 14 she was admitted to Mercy Hospital for further treatment and study.

At this time the patient was kept in bed; hot fomentations and a heat cradle were applied. Four injections of 1.5 cc. of 5 per cent sodium morrhuate were given on the 16th, 17th, 18th and 20th of April, all being given in the varicose vein just above the ulcer. After the last injection the ulcer was noted to be healing rapidly. At 6 a. m. on April 28, after sleeping six hours, the patient suddenly became dyspneic and lost consciousness; her pulse was of poor quality and the respiratory rate became slow. A considerable degree of cyanosis developed, and the skin became moist and cold. One ampule of caffeine with sodium benzoate was given without effect, and respirations ceased fifteen minutes after the onset of the attack.

A total of 7.5 cc. of a 5 per cent solution of sodium morrhuate had been given, and death occurred thirty-one days after the first and eight days after the last injection.

Autopsy by Dr. Enstace L. Benjamin revealed essentially a 4 by 4.5 cm. granulating wound on the mesial aspect of the left shin about the middle third. The surrounding skin was indurated and brown red to gray red. The posterior aspect

COMMENT

The first case of fatal pulmonary embolism following the injection of sclerosing solutions for the treatment of varicose vein was reported in 1922 by Hohlbaum.⁵ The first American author to report a fatal case was Olson⁶ in 1927. A comprehensive review of the literature on this subject was first attempted by McPheeters and Rice⁷ in 1928. These authors, after a careful search of the European and American literature, found 4 diagnosed cases of fatal pulmonary embolism in a total of 53,000 cases of varicose veins treated by injection. In 1931 Kettel⁸ reviewed 60,000 cases and reported ten deaths in addition to those reported by McPheeters and Rice. After careful analysis of these deaths, however, only one can be attributed to the present day recognized technic of injection treatment. Silverman⁹ reviewed the literature carefully up to 1931 and found a total of seventeen deaths and added one of his own, making a total of eighteen deaths. His search also revealed 3 nonfatal cases of pulmonary embolism following injection treatment. The literature was brought up to date in 1934 by Kilbourne,¹⁰ who

TABLE 2.—Reported Cases of Nonfatal Pulmonary Embolism Following Injection Treatment of Varicose Veins

No.	Author	Year	Solution Used	Amount	Ambulatory; Bedridden	Result
1	Redner, cited by Nohl: Wien. med. Wehn- schr. 76: 1250, 1926	1926	.....	.....	.....	Recovered
2	Keller: Zentralbl. f. Chir. 56: 3213, 1929..	1929	Sodium chloride 20%	.....	Bedridden	Recovered
3	Burton: U. S. Vet. Bur. Med. Bull. 6: 854, 1930	1930	Quinine preparation	.....	Ambulatory	Recovered
4	Binzl, cited by Liebholtz: Med. Welt. 4: 507, 1930	1930	.....	.....	Bedridden from phlebitis	Recovered
5	de Takats, Geza: J. A. M. A. 96: 1111, 1931	1931	.....	.....	Bedridden following appendectomy	Recovered
6	Probsteln: J. Missouri M. A. 33: 349, 1936	1936	Sodium salicylate 30%	5 cc.	Ambulatory	Recovered
7	Probsteln: J. Missouri M. A. 33: 349, 1936	1936	Sodium morrhuate	0.5 cc.	Ambulatory	Recovered
8	Probsteln: J. Missouri M. A. 33: 349, 1936	1936	Sodium salicylate 40%	10 cc.	Ambulatory	Recovered
9	Taylor: Aia. J. Surg. 45: 145, 1939.....	1939	Sodium morrhuate 5%	10 cc. in middle 1/2 of thigh	Ambulatory	Recovered after ligation of saphenous, femoral, external iliac veins successively
10	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
11	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
12	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
13	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
14	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
15	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
16	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered
17	Smith: Mil. Surgeon 85: 514, 1939.....	1939	Sodium morrhuate 5%	2-4 cc. daily	.....	Recovered

of the thigh and knee was dark reddish brown. Both pleural cavities were completely obliterated by firm fibrous adhesions. There were old adhesions between the pericardial sac and the pleural surfaces and diaphragm, and bilateral chronic adhesive and obliterative pleuritis.

The size of the heart was about normal and the valves were essentially normal. The coronary arteries showed a rather severe sclerosis with 40 to 50 per cent reduction in the patency of the lumen. There was a moderate degree of atherosclerosis at the beginning of the aorta, which increased in degree as the abdominal aorta was reached. The endocardium was fairly smooth throughout. The aortic valve leaflets were slightly sclerotic, with cohesion of their free margins at their point of attachment. The corpora aurantis were hard and slightly enlarged. There was a subepicardial sclerosis (soldiers' spots) on the ventral surface of the right ventricle.

Both main pulmonary arteries and their first division were occluded by coiled emboli. The lungs were dark red to gray and hyperemic. There was moderate coal pigmentation. Pleural surfaces were shaggy as the result of fibrous adhesions. The left common iliac vein was distended with blood; its tributaries deeper in the leg were occluded by antemortem clots. Other organs showed no noteworthy changes.

The pathologic diagnosis was bilateral pulmonary embolism; thrombosis of the veins of the left leg and common iliac vein; bilateral pulmonary hyperemia; generalized arteriosclerosis, especially of the abdominal aorta and of the coronary arteries; fibrous obliteration of the pleural cavities; chronic healing ulcer (varicose) of the left leg.

added 9 cases to those already collected by Silverman. Westerborn¹¹ in 1937 reviewed the cases in Sweden and reported eleven deaths in 30,000 cases. In the same year Homans,¹² reviewing one hundred and sixty-two vein ligations for thrombophlebitis at the Massachusetts General Hospital, reported three deaths from pulmonary embolism. In 1940 Dean and Dulin,¹³ reviewing about 600 cases of varicose veins treated by injection at the University Hospitals, State University of Iowa College of Medicine, reported two deaths from pulmonary embolism; they state that in their opinion the danger of embolism is greater than heretofore acknowledged and recommend routine high saphenous vein ligation preceding the injection treatment. Tables 1 and 2 list the reported cases of fatal and nonfatal pulmonary emboli following the injection treatment of varicose veins.

5. Hohlbaum: Zentralbl. f. Chir. 49: 218 (Feb.) 1922.

6. Olson, O. A.: Fatality Following Varicose Vein Injection, J. A. M. A. 89: 692 (Aug. 22) 1927.

7. McPheeters, H. O., and Rice, C. O.: Varicose Veins, J. A. M. A. 91: 1090 (Oct. 13) 1928.

8. Kettel, K.: Zentralbl. f. Chir. 58: 1498, 1931.

9. Silverman, Isidore: Incidence of Embolism in Treatment of Varicose Veins, J. A. M. A. 97: 177 (July 18) 1931.

10. Kilbourne, N. J.: Treatment of Varicose Veins of the Legs, J. A. M. A. 92: 1320 (April 20) 1929.

11. Westerborn, A.: Acta chir. Scandinav. 79: 321, 1937.

12. Homans, J., in Nelson's Loose-Leaf Surgery 3: 748, 1937.

13. Dean, G. O., and Dulin, J. W.: Pulmonary Embolism Following the Injection Treatment of Varicose Veins, J. A. M. A. 114: 1344 (April 6) 1940.

CONCLUSIONS

The injection treatment of varicose veins is not free from complications, which may even be fatal.

Injection of too large amounts of sclerosing solution, as was the vogue in the earlier days of treatment of varicose veins, is dangerous. It is noted from the accompanying tables that 40 to 90 cc. of solution was used in some of the fatal cases. In our opinion, no more than 10 cc. of solution should be injected at any one visit.

Injection in the presence of thrombophlebitis is a potential source of an embolus.

"In the injection treatment of varicose veins, proper selection of cases, skilled technic and the complete cooperation of the patient after the injection in continuing routine daily activities will lessen the frequency of pulmonary embolism."¹⁴

SUMMARY

1. An additional case of fatal pulmonary embolism following varicose vein injection was observed.
2. Bedridden patients should not be injected.
3. It is important to keep patients ambulatory following the injection treatment of varicose veins.

1180 East Sixty-Third Street.

Clinical Notes, Suggestions and New Instruments

SALMONELLA SCHOTTMÜLLERI ISOLATED FROM SACROLUMBAR LESION OF TWENTY-FOUR YEARS' DURATION

E. E. ECKER, PH.D., A. O. KUEHN AND E. W. RECROFT, M.D.,
CLEVELAND

Since Achard and Bensaude¹ established the etiology of paratyphoid fever in 1896, the causative organism and its related species and types have been isolated in numerous instances from abscesses of widely different tissues. The literature, however, offers only 3 doubtful cases in which an organism of the *Salmonella schottmülleri* type has been obtained from infections involving the bones.

Achard and Bensaude were the first also to describe a case of purulent arthritis from which this organism was recovered. In 1900 Cushing² reported the discovery of a paratyphoid bacillus from a costochondral abscess, and in 1916 Gildemeister³ isolated a similar organism from a periosteal lesion of the forearm. There is little assurance that the organisms found in these early cases are of the true *Schottmüller* type. The complex antigenic constitution of this group of organisms was not known and serologic methods of differentiation therefore still were undeveloped.

REPORT OF CASE

History.—A white man aged 36 had been admitted to a hospital for one month with high fever of unknown origin when he was 13. At the end of this time severe pains in the right sacrolumbar region prompted an exploratory operation on that side. Negative results and continued pain suggested that the pain originated from the spine, and a body cast was put on. However, after removal of the cast the pain recurred. He was again placed in a cast, and this cast was reduced gradually over a period of six months. With final removal of the cast the pain had completely disappeared.

From that time on, and up until two years before the present admission, the patient remained well but suffered occasional relapses following any straining of the back. Two years before the present admission the patient was hospitalized for a severe relapse (fever and pain in the back), and again a cast was put on. After removal of this cast, which was worn for eight weeks, a sacrolumbar abscess was uncovered and a culture was taken from the pus, with negative results. The abscess has since opened spontaneously on two occasions and has been aspirated once. Previous to this report, all bacteriologic examinations had given negative results. At the beginning of this year the patient again suffered a relapse and pus was aspirated from the sacrolumbar abscess. The organism recovered will be characterized.

Röntgenologic Examination.—The lesion was found between the fifth lumbar and the first sacral vertebra, involving the end-plates and destroying the intervertebral disks. A large spur was observed on the upper anterior surface of the fifth lumbar vertebral body. The lesion appeared to represent an old infectious spondylitis. An extensive sinus tract was also noted in the left midquadrant, situated retroperitoneally and extending to the subcutaneous tissues of the back but not communicating with either the left kidney or any part of the colon. A possible relationship was believed to exist between the sinus tract and the vertebral lesion, but roentgenologically a communication was not observed between the two processes.

Bacteriologic Examination.—Aspirated pus was inoculated on Endo agar, Wilson-Blair agar, desoxycholate agar, blood agar, Sabouraud's maltose and dextrose agar and Löwenstein's and Petragnani's mediums. At this time pus was injected into the inguinal region of 2 guinea pigs.

From the differential mediums (Endo, Wilson-Blair and desoxycholate agars) a short, thin, motile and gram-negative rod was isolated.

The Sabouraud, Löwenstein and Petragnani mediums showed no growth and at the designated time the guinea pigs failed to show evidence of tuberculousis.

Cultural Characteristics.—On nutrient agar the colonies of the isolated organism compared favorably with colonies of the paratyphoid group. The new strain (Z) failed to produce a slime wall; *Schottmüller* strains generally produce a slime wall. The Z strain also failed to show raffinose budding.

The Z strain did not produce gas in any of the carbohydrates and alcohols in the early cultures. Only after three months did the transplants show a slight amount of gas.

In general, it can be said that the fermentation reactions of the Z strain, with the exception of its failure to attack glycerin and to produce gas, paralleled the accepted reactions of a true *Schottmüller* type.

The Z strain decomposed salts of organic acids, namely sodium citrate and levosodium tartrate but not dextrosodium tartrate. It was capable of reducing nitrates. On Bitter's rhamnose milk the organism changed the methyl red indicator to yellow. On Rothberger's neutral red agar it brought about at first a fluorescence and later a decoloration of the medium. The Z strain produced hydrogen sulfide.

On the basis of its cultural characteristics, then, the Z strain deviated from that of *S. schottmülleri* only in the following respects: (1) It did not exhibit a slime wall, (2) it did not produce budding on raffinose agar and (3) it did not attack glycerin.

Serologic Examination.—All agglutination reactions were carried out according to the macroscopic technic of Coleman. It was shown that the X organism agglutinated in an Eberthella typhi immune serum in dilutions up to 1:40, in a *Salmonella* paratyphi A immune serum in dilutions up to 1:80 and by an *S. schottmülleri* immune serum in dilutions up to 1:2560.

Conversely, agglutination tests were set up with the patient's serum and known organisms. The patient's serum agglutinated the *E. typhi* O, *E. typhi* B, *S. paratyphi* A and *S. schottmülleri* antigens only to a very slight degree (1:20 to 1:40). However, the patient's serum, in dilution up to 1:1,280, agglutinated its homologous antigen (Z). The failure of this serum to agglutinate a known *S. schottmülleri* does not lessen the value of the presumptive test, because in many cases in which *S.*

14. Theis, F. V.: *Surg., Gynec. & Obst.* 60:996, 1935.
Drs. P. R. Edwards and M. B. Coleman made corroborative examinations of this strain.

From the Institute of Pathology and the University Hospitals, Western Reserve University.

1. Achard, Charles, and Bensaude, Raoul: *Bull. et mém. Soc. méd. d. hôp. de Paris* 13:820, 1896.

2. Cushing, Harvey: *Bull. Johns Hopkins Hosp.* 11:156, 1900.

3. Gildemeister, E.: *Centralbl. f. Bakt. (Abt. I)* 78:129, 1916.

schottmülleri organisms have been involved results identical with those observed here have been reported.

Absorption.—Absorption tests were carried out with a diluted immune serum (one-sixty-fourth end titer) in order to eliminate a prozone effect. In every instance the absorption was complete. These tests included the following: (1) The patient's serum was absorbed with *S. schottmülleri* organisms and the absorbed serum tested with *S. schottmülleri* as well as with the Z organisms. 2. The patient's serum was absorbed with the Z strain and the absorbed serum tested with the Z organisms. 3. *S. schottmülleri* immune serum was absorbed with the *S. schottmülleri* and also with the Z strain, and the absorbed serums were tested with both strains.

The Z organisms absorbed all the agglutinins from the patient's serum as well as from the specific immune serum.

Immune Serums Made from the Z Strain.—Rabbits were immunized with H and O antigens of the strain. The Z-H antiserum agglutinated its homologous antigen up to a dilution of 1:10,240, while only weak agglutinations were noted when the Z-O antigen was employed. This serum further agglutinated the *S. schottmülleri* and aertrycke antigens in dilutions up to 1:1,280 and 1:320 respectively. The nonspecific agglutination of the *Salmonella* aertrycke by the Z-H immune serum is explained by the fact that it shares common antigenic factors with the *S. schottmülleri* strain.

The immune serums prepared against the Z-O antigens were not as specific as the immune serums prepared against the Z-H antigens, and agglutinations similar to those described for the Z-H immune serums were employed to determine specificity.

The Z-O immune serum, in dilutions up to 1:320, strongly agglutinated its homologous antigen, while at the same dilution it only weakly agglutinated the Z-H antigen.

When *Salmonella enteritidis* and *Salmonella suipestifer* organisms are employed with the Z-O immune serums, only questionable agglutinations were observed. However, the Z-O antiserum, in dilutions up to 1:160, agglutinated the *S. aertrycke*, which shows the close relationship between it and the *S. schottmülleri*.

Antigenic Analysis.—During the past two decades the serologic differentiation of the *Salmonella* group advanced rapidly and culminated in the splendid works of White⁴ and of Kauffmann.⁵ From these studies it is known that in many members of the *Salmonella* group, including the *S. schottmülleri*, the flagellar (H) antigens are diphasic. In these instances the flagella of the so-called diphasic organisms may assume two alternative forms, namely a specific phase and a group phase. The antigenic components of the specific phase are specific for the particular species or type concerned, or they may be shared by only a few other species or types. The antigenic components of the group phase are, however, shared by many other species or types. A diphasic organism may possess one or both phases. An organism in one phase, although always capable of giving rise to descendants in the alternative phase, usually produces daughter cells having their own particular phase. In any given species or types there may be more than one H antigen (flagellar) in the specific phase. The number of H antigens in the specific phase varies usually from one to four. Generally, several different antigens occur in the group phase, numbering usually from two to four.

In regard to the O antigens (somatic), the majority of species have two components. Some show more than two.

The terminology of Kauffmann was adopted for *Salmonella* by the *Salmonella* subcommittee in 1934.

The somatic O antigens are labeled with Roman numerals, while the specific flagellar H antigens are indicated with small letters of the alphabet. However, the numbers of H antigens soon exceeded the letters of the alphabet, and the later additions were given the symbols of Z₁, Z₂ and so on.

This method of classification is based purely on the antigenic factors, forming no part of the name of any given species or

types. The Z strain was then tested with the serums of Dr. Kauffmann and according to the Kauffmann-White schema; the antigenic composition of the organism isolated in this case is as follows: IV, V:b→1, 2. This corresponds to the structure of *S. schottmülleri* isolated from pus involving bone and is the first instance in which a complete identification of the organism is offered.⁶

2085 Adelbert Road.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

WESTERN ELECTRIC 4C AUDIOMETER ACCEPTABLE

Manufacturer: The Western Electric Company, 300 Central Avenue, Kearny, N. J.

The Western Electric 4C Audiometer is a screening type instrument by which it is possible to test the hearing of as many as forty persons at one time. The firm states that the apparatus is essentially a phonograph to which has been added telephonic apparatus. The phonograph is of the spring motor type with a magnetic reproducer. The magnetic reproducer picks up the vibrations originated by the record and transforms them into electrical vibrations, which are conveyed to a telephone head-set and the person or persons under examination hear the sound waves as if by telephone. All the necessary electrical energy is developed in the magnetic reproducer.

Intensity of the speech sounds heard on the double faced specially made records decreases in small steps from a maximum to a minimum intensity; this process occurs four times in playing each side of the record. The first two series of numbers on each face are spoken in a woman's voice and the second two in a man's voice. Each decreasing series is composed of different numbers. The same rate of intensity attenuation is maintained in all eight series. Of the two records provided, one uses two digit numbers and is generally used for classes below the fifth grade; the other, with three digit numbers, is generally used for the fifth grade and above.

The individual being examined writes the numbers heard on a special recording sheet. A master sheet provided makes possible quick checking of the results.

An audiometer of this type cannot be judged in accordance with the requirements in the Council's adopted article "Minimum Requirements for Acceptable Audiometers." Since it is not a so-called pure tone audiometer, and the manufacturer does not claim it to be such, it is used only for screening purposes and not as a diagnostic instrument and is not accepted as such.

In investigating the instrument clinically a group of students entering college were tested for hearing loss in accordance with directions supplied by the manufacturer. The examination was a routine part of student health activities in a large university.

A group of men students (more than one hundred) was tested in the quietest room in the gymnasium building, and thirty of them were shown to have measurable hearing losses. When they were retested in a sound proofed room in the psychology laboratory, none of the thirty were found to have defective hearing. This points out the importance of having a very quiet room in which to conduct the tests.

The Council voted to accept the Western Electric 4C Audiometer for inclusion on its list of accepted devices as a device for assisting in testing the hearing of groups of individuals.

6. At the completion of this study, the abscess was again aspirated and the same organism was isolated.



Western Electric 4C Audiometer.

4. White, P. B.: The *Salmonella* Group, Med. Research Council A: 86, 1929.

5. Kauffmann, F.: Zentralbl. f. Bakt. (Abt. I) 119: 152 (Dec. 8) 1930; Zentralbl. f. d. ges. Hyg. 25: 273 (Aug. 25) 1931; Commun. de l'Inst. sero. l'Etat Danois 28: 177, 1939; Acta path. et microbiol. Scandinav. 17: 429, 1940.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 11, 1942

THE ATLANTIC CITY SESSION

Last week THE JOURNAL published a statement from Undersecretary of War Patterson urging continuation of plans for the annual session of the Association in Atlantic City. Discussion as to the desirability of proceeding with all the plans for the Atlantic City session led officials of the Association to communicate also with the Secretary of the Navy. A letter just received from Commander Edward A. Hayes, special assistant to Secretary Knox, states that Secretary Knox requested him to give the assurance that it is their hope that the proposed annual meeting of the American Medical Association will be a great success. To use the exact expression of Secretary Knox,

"There is no doubt that our defenses along the entire Atlantic Coast will be greatly improved by June and I regard any danger to guests of Atlantic City from that source as insignificant."

As has been stated previously, the special issue devoted to the plans for the Atlantic City session will be THE JOURNAL for May 2. The programs are complete. Special symposiums related to problems of current medical interest and to military medicine and the contribution of visitors from some of the Latin American countries are assured. All the exhibit space available in the Scientific Exhibit has long since been assigned and practically all the space in the Technical Exhibits has already been taken.

CONTROL OF DRUGS AND MEDICAL SUPPLIES

Some of the most complicated and difficult questions confronting various agencies concerned with the most efficient conduct of the war effort have been those concerned with making available to all war agencies proper amounts of essential drugs, chemicals and materials used in medical supplies and at the same time meeting essential civilian needs. Innumerable professional and commercial interests have been involved in these problems. As the problems have arisen, various agencies in the federal government have

been concerned with various aspects of these questions, so that correlation and coordination have been exceedingly difficult. Recently a preliminary conference was held by the Division of Medical Sciences of the National Research Council, to which a number of representatives of various agencies were called. A second conference, growing naturally from the first, was held in Washington April 3, at which definite action was taken leading to the establishment of a central committee to give consideration to each of the problems as they arise and thus to be able to advise all agencies as to basic facts necessary for the making of competent decisions.

The second conference was called largely as a result of a request received from Mr. J. S. Knowlson, director of the Division of Industry Operation of the War Production Board, who asked for the compilation of a list of drugs now scarce, an estimate as to scarce drugs essential to the national health, and the uses to which such drugs might be applied in order of their importance. It was recognized also that conditions change from day to day and certainly from month to month, so that a continuing body might be necessary and available for constant consultation.

In the conference called by the Division of Medical Sciences, representatives were present not only from the War Production Board, the Office of Price Administration, the Office of Defense Health and Welfare, the Office of Civilian Defense, the Federal Trade Commission, the Division of Medical Sciences of the National Research Council, the Army and Navy medical departments and the Office of Scientific Research and Development but also from the United States Pharmacopeia, the National Formulary, the American Drug Manufacturers Association and the American Medical Association. This conference adopted a motion reading:

That it be recommended to the Division of Medical Sciences of the National Research Council that a representative committee be established to consider and advise on problems of drug and medical supplies and on their distribution; that this committee include liaison representatives from all federal agencies now concerned with this subject; that the committee consider all problems related to the supply of essential drugs and medical supplies with a view to conservation, increased production or substitution and with a view toward coordination and correlation of effort for efficiency in the maintenance of the public health and satisfaction of military needs.

Subsequent to receipt of this action, the chairman of the Division of Medical Sciences, Dr. Lewis H. Weed, appointed a committee and requested each of the federal agencies concerned to designate a liaison representative who will sit constantly with the committee appointed. The Committee on Drugs and Medical Supplies includes:

Dr. Walter W. Palmer, New York, Chairman;
Vice Chairman, Council on Pharmacy and Chemistry,
American Medical Association;
Professor of Medicine, Columbia University Medical
School.

Dr. Perrin H. Long, Baltimore:

Chairman, Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council;
Professor of Preventive Medicine, Johns Hopkins University Medical School;
Member, Committee of Revision, United States Pharmacopeia.

Dr. Ernest E. Irons, Chicago:

Formerly member, Council on Pharmacy and Chemistry, American Medical Association;
Secretary, Board of Trustees, American Medical Association;
Professor of Medicine, Rush Medical College.

Dr. Morris Fishbein, Chicago:

Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION;
Member, Council on Pharmacy and Chemistry, American Medical Association;
Member, Board of Trustees, United States Pharmacopeia;
Chairman, Committee on Information, Division of Medical Sciences, National Research Council.

Mr. J. G. Searle, Chicago:

President, American Drug Manufacturers Association;
President, G. D. Searle & Company.

Mr. George W. Merck, Rahway, N. J.:

President, Merck & Company, Inc.

Dr. E. F. Kelly, Washington, D. C.:

Chairman, Board of Trustees, United States Pharmacopeia;
Secretary, American Pharmaceutical Association.

Dr. O. H. Perry Pepper, Philadelphia:

Chairman, Committee on Medicine, Division of Medical Sciences, National Research Council, ex officio.

Dr. Evarts Graham, St. Louis:

Chairman, Committee on Surgery, Division of Medical Sciences, National Research Council, ex officio.

The committee proposes to establish subcommittees familiar with the essential information that will be required regarding available supplies of various drugs and medical materials and the means of conserving such materials, of substituting for them and of increasing production as the needs arise.

THE LONGEVITY OF PHYSICIANS

Physicians always advise their patients how to live longer and better; they themselves often die prematurely of preventable or at least postponable causes. The prevalence of deaths from heart disease, particularly coronary disease, among physicians at relatively early ages has in recent years increased sharply. Coronary disease has come to be known among physicians as "doctors' disease." Doctors favor health supervision without waiting for illness to appear. The National Health Council and the American Medical Association in 1922 declared in favor of periodic health examinations of apparently healthy persons. The American Medical Association has published a manual¹ and a blank² in the hope of stimulating medical interest in

periodic health examinations and several pamphlets³ intended to interpret the idea to the layman. Nevertheless, except for insurance company and industrial periodic examinations, the idea has not become popular.

A new development is the Committee on Longevity, Class of 1900, College of Physicians and Surgeons, New York, which has organized for the purpose of prolonging the lives and improving the health of the one hundred surviving members of the class, which originally numbered one hundred and seventy-five graduates. Already the idea has received much publicity through editorial comments in New York papers. Superficially amusing, but basically significant, is this comment from an editorial in the New York Sun:⁴

Laymen whom middle age prompts to think of such things are bound to be interested in the work of the Longevity Committee set up by the Class of 1900 of Columbia College of Physicians and Surgeons. These doctors should be able, if anybody can, to propagate the art of collective good health. Laymen will note with an understanding smile, however, one of the problems the Longevity Committee regularly meets as it conducts a monthly study of reports on physical examinations of the members. It finds that a good many doctors have this much in common with a good many laymen: they neglect their periodic examinations or delay in taking treatment.

If these physicians can stimulate others they may succeed in awakening a more lively interest among practicing physicians in periodic health examinations. At present medical and lay apathy in virtually equal parts explain the failure of the American people to adopt the sound and sensible idea of periodic health examinations as a means toward better and longer life.

Current Comment

PERSONNEL FOR THE ARMY AND NAVY MEDICAL DEPARTMENTS

The Procurement and Assignment Service for Physicians, Dentists and Veterinarians has been seriously engaged in clearing the names of physicians, dentists and veterinarians who have volunteered for service with the Army and Navy medical departments or with various other federal agencies. The tremendous demands made on the government printing office have somewhat delayed the printing of the enrolment form and questionnaire. The continuing demand for physicians makes it desirable therefore that physicians under 37 years of age continue to apply for enlistment in the Army and Navy medical departments.

The immediate needs of the Army and Navy medical departments and of the Air Force, as stated in previous issues of THE JOURNAL, will demand during the year 1942 approximately fifteen thousand or sixteen thousand additional physicians. Those now ready to make application need not delay, therefore, in submitting their names at once. Under the heading of Medicine and the War in this issue of THE JOURNAL appears an author-

1. Periodic Health Examination: A Manual for Physicians, Chicago, American Medical Association, 25 cents.

2. Periodic Health Examination Blanks, Chicago, American Medical Association, single copies 5 cents.

3. Height-Weight Table for Men and Women, Chicago, American Medical Association, 10 cents. What Is A Health Examination Anyway? by Haven Emerson, 10 cents. If I Keep My Health, by W. W. Bauer, 5 cents. That Annual Check-Up, by A. H. Aaron, 10 cents.

4. New York Sun, July 9, 1941.

ized statement by Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy, indicating how physicians who wish to apply for commissions in the Navy may take action in that regard.

THE DISTINGUISHED SERVICE MEDAL

The Distinguished Service Medal of the American Medical Association will be presented for the fifth time at the Opening General Meeting during the annual session of the Association in Atlantic City, June 9. This medal was awarded, for the first time, in 1938 to Dr. Rudolph Matas of New Orleans, in 1939 to Dr. James B. Herrick of Chicago, in 1940 to Dr. Chevalier Jackson of Philadelphia and last year to Dr. James Ewing of New York. This award has come to be recognized as one of the most distinguished honors within the gift of the American Medical Association. The method of selection of the recipient of the Distinguished Service Medal is specifically defined in the By-Laws of the Association. Any Fellow of the Association may submit nominations, which should be sent, together with a record of the scientific services of the nominees, to the chairman of the Committee on Distinguished Service Award, Dr. A. A. Walker, 2250 Highland Avenue, Birmingham, Ala., or to the Secretary of the Association at 535 North Dearborn Street, Chicago. Of all nominations received by the committee, five are submitted to the Board of Trustees of the Association, from which the Board selects three to be submitted to the House of Delegates at its first meeting at the time of the annual session. Immediately on submission of the nominations by the Board of Trustees, the House of Delegates by official vote selects the recipient of the honor, to whom the Distinguished Service Medal is presented at the Opening General Meeting on the evening of the following day. An extended list of distinguished physicians nominated for this award will enable the Committee, the Board of Trustees and the House of Delegates, all of whom participate in the selection, to determine for 1942 a recipient of distinction, whose nomination will reflect favorably on himself and on the Association.

USELESS TANK TO BECOME USEFUL TANKS

At last the Cunningham tank is to serve some useful purpose. An Associated Press dispatch datelined Cleveland, March 31, states that this "giant shell ball . . . is being dismantled and its 1,000 tons of metal will go to the mills as scrap." The tank here referred to was originally constructed some thirteen years ago by the late Dr. Orval J. Cunningham of Kansas City, Mo., for the purpose of instituting his preposterous pressure treatment for diabetes, pernicious anemia and carcinoma. The million dollars required to build it was supplied largely by the industrialist Timken, manufacturer of bearings. Why do people of great wealth who are unacquainted with scientific fact and apparently unwilling to consult scientific authority so frequently support strange notions in the field of medical care? THE JOURNAL for May 5, 1928 carried a two and a

half page report of all the details connected with the method of treatment. "To explain his alleged results," said THE JOURNAL, "Dr. Cunningham advances a thesis that is altogether without scientific proof." It added "Under the circumstances, is it to-be wondered at if the medical profession looks askance at the 'tank treatment' and intimates that it seems tinctured much more strongly with economics than with scientific medicine?" Operated for several years on the unproved Cunningham thesis, it was noted in *Time* for Oct. 8, 1934 that

James Henry Rand Jr., chairman-president of Remington-Rand (office equipment), had sufficient faith to entrust Mrs. Rand to Dr. Cunningham's aerotherapeutics. And their son James Henry Rand III, onetime University of Virginia medical student, had sufficient faith to understudy Dr. Cunningham for the past seven years. Last week young Mr. Rand bought Dr. Cunningham's sphere for \$500,000, will henceforth operate it with the help of Dr. Carl William Iuler, 36, as the Ohio Institute of Oxygen Therapy.

Thus another industrial fortune was involved in this enterprise, which in the ensuing six years since its original construction had not accumulated the slightest bit of evidence of scientific worth. Fortunately the armed services of the United States will be able to find better use for the metal than it seems to have served.

CLINICAL ESTIMATION OF BLOOD PRESSURE

The recorded level of blood pressure, in addition to individual fluctuation, is affected by numerous technical circumstances, such as the nature of the apparatus and whether the measurement is made by auscultation or by palpation. In a new study of the accuracy of blood pressure recordings, Ragan and Bordley¹ compared auscultatory pressure measurements with intra-arterial pressure measurements one hundred and thirty-eight times in 51 adult subjects. They found that the agreement between the auscultatory and intra-arterial measurements of systolic pressure was affected both by the size of the subject's arm and by the contour of the pulse wave. They concluded, therefore, that the commonly employed clinical method of measuring blood pressure should not be considered a truly accurate procedure and that misinformation is particularly likely to be obtained in subjects with unusually large or unusually small arms. If the arm is small, the clinical estimate of the systolic pressure is likely to be too low; if the arm is large, the clinical estimate of both systolic and diastolic pressures is likely to be too high. The error in either direction may exceed 30 mm. of mercury. These workers believe, therefore, that statistical studies of the relationship between blood pressure and body weight should take into account the measurement of the circumference of the arm on the accuracy of the blood pressure measurements. These investigations add to the evidence already available that the clinical expression of blood pressures must be accepted conservatively and interpreted with caution.

1. Ragan, Charles, and Bordley, James, III: The Accuracy of Clinical Measurements of Arterial Blood Pressure, *Bull. Johns Hopkins Hosp.* 69: 504 (Dec.) 1941.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

METHOD OF PROCUREMENT OF MEDICAL OFFICERS FOR THE U. S. NAVAL RESERVE

Rear Admiral Ross T. McIntire, surgeon general of the Navy, has submitted the following information:

Recruitment of medical officers for the U. S. Naval Reserve has been transferred from the office of the commandants of the naval districts to the directors of naval officer procurement, located in the cities listed. A physician desiring to apply for appointment in the Medical Corps of the Naval Reserve should communicate directly with the director of naval officer procurement in the location nearest his place of residence. A communication addressed to the director should contain full information regarding date of birth, medical school from which graduated, and professional attainments since graduation. In this communication the prospective applicant should request a circular of information for persons desiring appointment in the U. S. Naval Reserve, and application forms for such appointment.

The Procurement and Assignment Service does not act as a recruiting agency for the U. S. Navy. Applications for appointment in the Medical Corps of the U. S. Naval Reserve are cleared through the Procurement and Assignment Service by the directors of naval officer procurement. The only purpose of clearing through this service is to determine which applicants hold civilian positions essential to national defense, to another governmental agency, and those considered essential

on teaching faculties of accredited medical and dental schools. Such individuals will not be offered commissions in the U. S. Naval Reserve.

If physicians fill out the new questionnaire blanks which are soon to be distributed by the Procurement and Assignment Service and indicate that they desire to apply for appointment in the U. S. Naval Reserve, their names will be submitted to the Bureau of Medicine and Surgery, which in turn will communicate with these physicians.

OFFICES OF NAVAL OFFICER PROCUREMENT

First Naval District, 150 Causeway Street, Boston.

Third Naval District, 33 Pine Street, New York.

Fourth Naval District, seventeenth floor, Widener Building, Philadelphia.

Fifth Naval District, Chevrolet Parts Building, Norfolk and Altamont streets, Richmond, Va.

Sixth Naval District, The Center, Marion Square, Charleston, S. C.

Seventh Naval District, Langford Building, 121 S.E. First Street, Miami, Fla.

Eighth Naval District, Louisiana Building, 217-227 Camp Street, New Orleans.

Ninth Naval District, Board of Trade Building, 141 West Jackson Boulevard, Chicago.

Eleventh Naval District, 850 Lilac Terrace, Los Angeles.

Twelfth Naval District, Federal Office Building, Civic Center, San Francisco.

Thirteenth Naval District, 117 Marion Street, Seattle.

Washington, D. C., 1320 G Street N.W.

THE BATTALION MEDICAL OFFICER

HAROLD R. CONN, M.D.,
Akron, Ohio

The battalion medical officer probably enjoys the most individualistic responsibility of any officer in the service. Where his colleagues attached to sorting stations, ambulance companies and evacuation hospitals have the advantage of contact and conference, he is likely to be alone at the time of greatest stress.

It is obligatory that the battalion surgeon be young, in perfect health and physically tough to withstand the rigors of active campaigning with his unit. He must master subjects foreign to his colleagues in the rear and, to mention a few, these include troop hygiene and sanitation, medical corps training and drill, map reading, orientation and something of tactics and the art of concealment. The training of his enlisted personnel is a task of paramount importance, and there are many other fields to explore, such as gas proofing. The selection of sheltered havens where battle casualties

may be protected, and the vital problem of feeding the wounded.

He may consider these exertions medical inactivity, but there will follow periods when all his skill will be required and the military routine will be less exacting than the professional requirements. These extraordinary demands will come during severe and sustained action and he must retain coolness and calmness and must show a near perfection of surgical judgment under the most adverse conditions. Surgical judgment is that indefinable but essential attribute compiled of just the right mixture of a stable nervous system, past surgical experience, common sense and an ever ready diagnostic ability. It seems a needless sacrifice; but wars are won by sending the best men to the front, for only the best possess the essential qualities necessary to insure victory.

The battalion medical officer's responsibilities make demands on his previous training but in surroundings and under conditions which exist nowhere in his past experience. He most certainly has never before been suddenly confronted with a half hundred or more

injuries running the gamut of head, chest, abdomen and extremities, nor has he ever before worked to the limit of his physical and mental capacities where all about him is chaos and confusion. True there is little in the routine but essential military training that fits him to meet this sudden and overwhelming activity, but experience can be simulated by military maneuvers and through special training from his regimental and division surgeons.

QUALIFICATIONS OF A FIRST LINE MEDICAL OFFICER

In fact, no greater duty rests on the division surgeon than to see that his first line officers are selected from men who show initiative and have had some civilian traumatic experience. They should be taught the routine and correct use of tourniquets and traction splints, the differentiation between traumatic and cerebral shock, and a profound appreciation of the effects of dehydration, exposure and hemorrhage on wounded men. In this training the time element should be stressed as all important. The rapid collection of wounded and their intelligent dispatch to the rear definitely determines the mortality rate of all except the trivial and the initially fatal injuries. Many problems will arise which never confront the physician in civilian practice, where the ever ready and fast ambulance delivers the casualty to the hospital receiving room usually within a matter of minutes, not hours, as may be the fact in war.

There exists the notion among young medical graduates that an appointment to operative surgical teams or to base hospitals offers opportunities to gain vast experience in chosen specialties, whereas being assigned as a battalion medical officer is an atrophy of previous education and is absurdly wrong.

With a few individual exceptions, the surgery in World War I taught the physician but little. As a member of an operating team he found that the injuries differed greatly from those seen in civilian life, and the technic of débridement (operative cleaning of the wound) was destructive rather than constructive. There was, moreover, no opportunity to observe the end results of operations done. In base hospitals the surgery was and will be done by a few men, and the junior officer will act as the equivalent of a house officer in a well organized civilian institution. Finally, between the surgical units operating behind the field of battle and the combat battalion there is little or nothing in the way of practical civilian medical experience to be acquired.

THE REAL TEST OF SKILL: BORDERLINE CASES

The battalion officer, on the contrary, after a period of military training may some day expect to find himself confronted with a number of injuries which would disorganize the largest civilian hospital in the United States. He may anticipate that in a relatively minor engagement 10 per cent of his battalion will be wounded. Considering the total casualties, one half will represent trivial and initially fatal wounds while the remaining half, or 50 per cent, will present the real test of skill. The mortality rate of this last group will be positively influenced by the ability, resourcefulness and courage of the medical officer.

It seems unnecessary to call attention to the fact that moribund patients should not be evacuated from the battalion aid station, yet this instruction had to be repeated again and again to the vast majority of bat-

talion surgeons during their early weeks of real action in the last war. As physicians all of us have been trained not to usurp the powers of Providence but to attempt to save every patient against impossible odds and to keep trying until life is fully and completely lost. This principle cannot entirely endure on the battlefield. Even to the inexperienced medical officer it must be obvious that he will be confronted simultaneously with hopelessly wounded and with cases in which reasonably prompt treatment and evacuation will result in recovery. He must learn under the trying conditions of active combat to recognize promptly the fatally injured and enulate the calm impartiality shown by the judiciary when they pass sentence by refusing to clutter his limited evacuation facilities with the doomed. It is platitudinous to state that, no matter how good the surgical facilities and personnel may be in the rear, they cannot save mortally wounded and dead men. The borderline cases present the real test of ability. Many of these may be saved by proper deshocking, either prompt mobilization or immobilization awaiting reaction, all depending on the wound and the response to initial diagnosis and treatment.

In a lifetime of emergency surgery the physician will probably not be called on to make the decisions which were demanded daily of the battalion surgeon during such offensives as the Meuse Argonne. Questions as to whether to give more morphine or to withhold it, to continue deshocking by external heat and posture or attempt to rush the patient to a hospital, to loosen the tourniquet at the risk of death or to leave it tight and sacrifice a limb, to attempt to separate cerebral shock from traumatic shock, and to estimate the degree which cold, fright, dehydration, and exposure aggravated wounds were presented at times by the minute.

These are not flights of fancy but the cold reality which confronts the battalion surgeon hidden in a poorly lighted dugout or in a shell hole under fire in the dead of night without adequate help, with some of his own stretcher bearers wounded and with the field around him still covered with badly wounded but unrecovered men. There will be no blood pressure readings, no x-ray examinations and no pulse and respiration charts to help him. It should take but little imagination for the young officer to picture for himself the difference between this scene and the one in the hospital in which he trained, where an occasional casualty was brought in, where he had an abundance of professional assistance, superb nursing care, electric lights and blood transfusion available within ten or fifteen minutes after injury. The officer who feels that his professional talent will be wasted as a battalion surgeon simply hasn't been there.

It should be reemphasized that he must exercise not only coolness and good sense but shrewd diagnostic acumen under the most adverse conditions without the benefit of counsel and often after twenty-four hours or more of constant duty.

THE BUILDING OF MORALE

The morale of any battalion is very positively influenced by the ability and the élan of its medical personnel. Combat troops, however courageous, react splendidly to the knowledge that if wounded and helpless on the field they will somehow be recovered by the medical corps and will receive prompt, adequate and competent care. The outstanding records of many units can be partially credited to the courage and resourcefulness

of their supporting medical detachments. There is no place in either civilian or military professional activity where gratitude and devotion are so generously given as to a real doctor in action with combat troops.

After recovery and segregation in the battalion aid station or the collecting station the most common question asked the medical officer by the wounded is "How seriously am I hit?" or "Am I going to get well?" and the reaction on the part of the patient to a cheerful and reassuring response is one of the amazing phenomena of war wounds. It is second only to the dramatic reaction made by wounded men when placed in deshocking cabinets and external heat applied.

Every variety of injury needs special attention, but it should be recalled that during the first two years of the last war the mortality rate, not taking into account the amputation rate, of compound fractures of the femur was 83 per cent, a ghastly total which exceeded gunshot wounds of the head, the chest or the abdomen. When in 1916 the use of traction splints in the field as advocated by Sir Robert Jones was made a military order, the mortality of compound fractures of the femur was reduced to 27 per cent. The reduction was not so spectacular in the other compound fractures but it was sufficient to make it a military offense to ignore the dictum "Splint 'em where they fall."

ENLISTED MEN BECOME ADMINISTRATIVE CORPS OFFICERS

Two hundred and twenty-four enlisted men of the medical department of the Army became second lieutenants, March 28, when they graduated from the officer candidate course at the Medical Field Service School, Carlisle Barracks, Pa., following a course of instruction. These men were selected to attend the school by reason of their excellent military records. Forty-nine of the candidates were regular army enlisted men, nineteen were from the National Guard and one hundred and fifty-seven entered the army through Selective Service. The majority of them had only one year or less of service, thirty-one had had two years and thirty-one others three years of service. One hundred and twenty-six members of the class had college degrees, eighteen were pharmacists and seven were lawyers. The new officers came from thirty-six different states. The diplomas were presented by Brig. Gen. Addison D. Davis, Assistant Surgeon General of the Army and commandant of the Medical Field Service School. The oath of office was administered by Major Thomas G. Hester, one of the senior officers of the medical administrative corps.

THE HOARDING OF FIRST AID MATERIALS

Director James M. Landis of the Office of Civilian Defense, Washington, D. C., has announced that a wave of hoarding of first aid material is sweeping the country and threatens to produce a serious shortage of surgical gauze, bandages and other essentials required by the army and the Emergency Medical Service of the Office of Civilian Defense. Millions of first aid kits, he said, are being installed in countless places where there is practically no likelihood that they will ever be used. This unlimited purchasing of first aid material is based on a wrong conception of air raid casualties. Dr. George Baehr, chief of the Office of Civilian Defense Medical Division, said. These casualties are usually of such severity that only trained emergency medical field units are competent to attend the injured at the site of the accident. Emergency medical field units composed of doctors, nurses and trained auxiliaries have been established in every community likely to be bombed, especially on

THE DOCTOR IN ACTION

It is not the intent here to discuss the intriguing differentiation in the treatments of exposure, hemorrhage, acidosis and shock, for books have been written about the cause, symptoms and treatment of each individually. The battle casualty usually presents a combination of all of them, but the battalion surgeon will be amazed at the reactions of apparently desperately injured young soldiers to reassurance, traction splinting, morphine, external heat and hot fluids internally.

The treatment of infections and the chemotherapy of wounds by use of the sulfonamides likewise present special problems in instruction.

Once in action the days of paper forms, sanitary inspections and foot work are forgotten and the battalion officer becomes what he has studied and worked and hoped to be: a doctor in the full sense of the word. Among medical veterans the expression is common that if they go again they want to serve with troops and it is not only the excitement but the actual professional responsibility which inspires them.

Possibly good battalion surgeons are born or just happen, but certainly many can and must be made; for the whole medical organization behind them is dependent on their ability, while ahead of them the soldier places his trust and his life in their hands.

1144 East Market Street.

our coasts, and these units are promptly available in all parts of the community, day and night. Air raid wardens will not be expected to care for the wounded in the event of air raids, but, because of the present misunderstanding, tens of thousands of air raid wardens are stocking up on first aid material and urging every one in their zone to do so. Many households are duplicating the materials already in their medicine cabinets which would be of little value for the major crushing injuries which are characteristic of air raids. A small kit has been designed which contains a few large shell dressings and can be worn on a belt for an air raid warden or a trained stretcher bearer. Mr. Landis said that the rapidly increasing wastage of gauze bandages and other first aid material is reaching alarming proportions.

ONE MILLION BLOOD DONORS REQUIRED

The program of the American Red Cross for supplying blood plasma to the armed forces has entered its second year of operation, 30,477 blood donations being reported for the first two weeks in March by Red Cross chapters maintaining donor centers. Inaugurated in February 1941 at the request of the surgeon generals of the Army and Navy, this project has expanded as rapidly as laboratory facilities to process plasma have become available. Donor centers are now operating in eighteen cities. Shortly after beginning the project, the Red Cross was requested to deliver 380,000 units of plasma by July 1942. For the year beginning July 1, 1942 the Army and Navy have requested the Red Cross to obtain an additional 550,000 units, making a minimum total of 930,000 units. To provide this total will require somewhat in excess of a million donors. According to Dr. G. Canby Robinson, director of the Red Cross Blood Donor Service, the present rate of donations will have to be maintained without letup and may even have to be increased. Red Cross blood donor centers are now in operation in New York, Philadelphia, Baltimore, Buffalo, Rochester, N. Y., Indianapolis, Detroit, Pittsburgh, St. Louis, Boston, Milwaukee, Cleveland, Chicago, San Francisco, Los Angeles, Cincinnati, Washington, D. C., and Brooklyn. Seven commercial laboratories have contracts with the government for processing plasma on a cost basis. The total number of donations during the first year of operations aggregated 82,857. The value of

blood plasma in the treatment of burns and wounds and in combating shock was amply demonstrated at Pearl Harbor. Surgeons on duty there state that many lives were saved through the use of plasma supplied by the local medical society, the American Red Cross and other agencies.

INSTRUCTION IN CHEMICAL WARFARE

A series of four day intensive courses for teaching the medical aspects of chemical warfare to qualified physicians is to be given at the University of Cincinnati College of Medicine, which was selected by the Office of Civilian Defense, Washington, D. C. In the first group which took this course, beginning February 23, there were about thirty physicians from New England, New York and the Middle Atlantic states. Another course was started on April 6 for physicians from other parts of the country. The course was organized by Dr. Leon Goldman of the department of dermatology and Dr. Robert A. Kchoe, director of the Kettering Laboratory.

A school for gas defense to train experts in the field of poisonous gases will be established at the University of Buffalo (N. Y.). It is being inaugurated at the request of the Erie County Defense Council, whose chairman, Erie M. Wheeler, has appointed Dr. Howard W. Post, assistant professor of chemistry at the university, to organize the course of instruction. Fifty teachers from high schools of Erie County will take the course to prepare themselves for instructing civilians in their communities. Dr. Post says that the course will consist of three Saturday afternoon and one evening classes with a total of twelve hours of instruction to be provided by seven instructors.

SERVICE CLUBS FOR AUSTRALIA

The American Red Cross has announced that a staff of eight welfare workers with the American troops in Australia will set up Red Cross service clubs to provide recreation, sleeping quarters and canteen service for men on leave in at least three Australian cities. In charge of each of the clubs will be a prominent American man and woman, a social worker and volunteers from American residents in Australia. Charles Gamble, American business man long resident in Australia, will be American Red Cross delegate, with headquarters in Melbourne, and director of all activities; Irving Williams of the Washington national staff will be field supervisor of the Red Cross Military and Naval Welfare Service in all military stations, and Albert Scott, formerly with the Near East Foundation, will be recreational supervisor. The Red Cross also said that three million surgical dressings made by women volunteers have been shipped to the Australian Red Cross for use in Australian hospitals.

ALLOCATION OF EQUIPMENT FOR CIVILIAN DEFENSE

The first allocation of fire fighting equipment, gas masks, stretchers and cots under the recent \$100,000,000 Congressional appropriation for civilian defense will be made principally to certain cities within 300 mile coastal strips which are regarded as "target areas," a memorandum of plans released by James M. Landis, director of the Office of Civilian Defense, states. Communities will be selected largely on the basis of priorities established by the War and Navy departments. Three basic considerations will be used in determining priorities among communities: likelihood of attack, vulnerability and importance of war production of manufacturing plants in the communities. In urging communities not to send requests for requisitions for supplies to the headquarters of the Office of Civilian Defense in Washington, Mr. Landis says "Allocations of protective supplies must and will be made according to plans arrived at in cooperation with the military experts of the War Department. Under the law we cannot make allocation on any other basis and we will be unable to give consideration to the requests of individual localities at variance with such a plan."

Tentative allotment of equipment for medical teams and casualty stations will be made on the basis of (a) one team

for each 5,000 of population, (b) one casualty station for each two medical teams, stretchers on the basis of four for each 5,000 of population, cots on the basis of twelve for each 5,000 of population, first aid belts on the basis of nine for each 5,000 of population, and identification tags for medical kits on the basis of one book of twenty tags for each 5,000 of population.

Procurement of all the equipment and supplies will be by appropriate agencies of the War Department.

REPORTING OF REGISTRANTS WITH VENEREAL DISEASE

The following memorandum has been received from the City of New York Department of Health:

Current Selective Service medical and serologic examinations emphasize the value to the practitioner of prompt compliance with the venereal disease provisions of the sanitary code. All registrants found infected with syphilis, gonorrhea, chancroid or lymphogranuloma venereum are referred by the Selective Service administration to the health department for further consideration. Where the registrant is under medical care by his physician and has been properly reported, no further action is taken. Where men are not under medical care the need for rehabilitation, as well as for public health control of communicable disease, leads to intensive follow-up procedure to place all infected registrants under treatment. This follow-up is made by the health department by arrangement with the Selective Service.

Each physician should review his venereal disease cases and submit the required case report (417V) to minimize the possibility of inconvenience to him and particularly to his patients eligible for military service. A supply of the required forms and the regulations for reporting may be secured by application to the Bureau of Social Hygiene, Room 328, 125 Worth Street, New York City, or by telephoning Worth 2-6900, extension 252.

REHABILITATION PROGRAM

The Baltimore City Medical Society sponsored a meeting at Osler Hall, Baltimore, March 13, which was entirely devoted to the subject of the physical rehabilitation of Selective Service registrants. Brig. Gen. Lewis B. Hershey, National Director of Selective Service, discussed "The Program of Selective Service in the Rehabilitation of Registrants"; Col. Leonard G. Rowntree, Chief, Medical Division, National Selective Service Headquarters, "Medical Aspects of Rehabilitation"; Col. Henry C. Stanwood, State Director, Maryland Selective Service System, "Administrative Responsibilities of Rehabilitation," and Lieut. Col. Amos R. Koontz, State Medical Director, Maryland Selective Service System, "Brief Outline of the Maryland Rehabilitation Plan."

Maryland has been selected by the National Selective Service System Headquarters as the first state in which to try out the physical rehabilitation plan announced by the President. The plan involves the correction of remediable defects which disqualify registrants for general military service. The correction of defects is to be done by designated physicians and dentists at government expense.

THE BOTKIN HOSPITAL IN MOSCOW RECENTLY BOMBED

The largest medical unit in the Soviet Union, the Botkin Hospital in Moscow, was severely bombed during the German raids several months ago, but not 1 patient was killed, according to the Moscow radio correspondent of the New York Times. The Botkin Hospital had two thousand, three hundred and fifty beds available to war wounded, and until the Germans retreated from Moscow it was practically a front line hospital. At present the medical center is acting as a base hospital and even is resuming medical courses for the training of field surgeons. The Times correspondent said that medical supplies from the United States had been arriving and that a considerable proportion of the material from the Allies was going to new military hospitals being established elsewhere in the Soviet Union.

AMERICANS IN CANADIAN ARMED FORCES

Americans serving with the Canadian armed forces will be given an opportunity to enlist in the U. S. Army or Navy under an agreement with Canada, the State Department has announced. About fifteen thousand Americans are now in the Canadian services. The agreement provides that Canadian authorities, not later than April 6, shall inform all Americans who have lost their citizenship by taking an oath of allegiance on enlistment in the Canadian armed forces that they may regain their citizenship and enlist in the American services. April 20 was set as the limit for transfer applications.

SUPERINTENDENT OF NURSES PROMOTED TO COLONEL

The Superintendent of the Army Nurse Corps, Mrs. Julia O. Flikke, was promoted on March 14 to the grade of Colonel and the Assistant Superintendent of the Nurse Corps, Florence A. Blanchfield, to Lieutenant Colonel, for the duration of the war. Colonel Flikke, a native of Wisconsin, entered the school of nursing of Augustana Hospital, Chicago, in 1912, took postgraduate work at Columbia University, joined the Army Nurse Corps in 1917 and soon after was ordered overseas. She was appointed superintendent of the Army Nurse Corps with the relative rank of major in 1937. Colonel Flikke has served at various army stations, including the Philippines and Tientsin, China. Lieutenant Colonel Blanchfield is a native of West Virginia and graduated in nursing from the Southside Hospital in Pittsburgh, entering the Army Nurse Corps in 1917. She did postgraduate work at Johns Hopkins Hospital, Baltimore, and has served in France, China and the Philippines.

GEN. FREDERICK RUSSELL RECEIVES THE SNOW AWARD

Brig. Gen. Frederick F. Russell, U. S. Army Medical Reserve Corps, received the William Freeman Snow Award for distinguished service to humanity in the social hygiene field at the annual meeting of the American Social Hygiene Association in Boston, February 3. General Russell was for many years a member of the medical corps of the Army. He played a leading role in introducing antityphoid vaccination in the Army, carrying on this work at the time he taught bacteriology in the Army Medical School. The Snow Award was made in recognition of General Russell's work in organizing the syphilis and gonorrhea control program in the Army in the first world war, which it is said has become the basis of the present army program in this field. The two former recipients of this award were Gen. John J. Pershing and Surg. Gen. Thomas Parran of the U. S. Public Health Service.

THE WELLCOME MEDAL AND CASH AWARD

The Association of Military Surgeons of the United States announces the competition for 1942 for the Sir Henry Wellcome medal and cash prize of \$500 for the best paper on "Measures of Preventive Medicine Recommended by the Federal Medical Services to Insure the Maximum Improvement of the Selectee of 1961 over Him of 1941." The competition is open to all medical department officers of the Army, Navy, Public Health Service, organized militia, U. S. Veterans Administration, U. S. volunteers and those in the reserves, commissioned medical officers of foreign military services and all members of the association, except that no one person shall be awarded a prize more than once in these prize competitions. Competitors must send five copies of their paper unsigned by their true name but identified by a device or nom de plume to the Secretary of the Association of Military Surgeons of the U. S., Army Medical Museum, Washington, D. C., to arrive not later than Aug. 31, 1942 and accompanied by a sealed envelop marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The essays must have a minimum of three thousand words and must not exceed ten thousand words.

ONE WEEK INSTITUTES FOR NURSES

Under the sponsorship of the American Red Cross, the Michigan Department of Health, the Michigan State Nurses Association and the W. K. Kellogg Foundation, one week institutes are being given at Clear Lake Camp near Battle Creek, Mich., to provide an opportunity for Michigan nurses to brush up on their technic for teaching home nursing classes in connection with the civilian defense program. The first of the institutes was held the week of March 9, the second began March 16, and others will follow. The Kellogg Foundation provides meals and lodging for nurses in attendance.

BALTIMORE'S DECONTAMINATION CORPS

"Sniff" sets will be used to teach one hundred and sixty-one employees of the Bureau of Street Cleaning of Baltimore how to recognize war gases as a part of their instruction in methods of gas decontamination, the Baltimore Sun reports. In the group there will also be seventy-five chemists and one hundred and forty-two additional citizens. These will comprise the city's decontamination corps. Decontamination of streets and lawns and first aid for victims of war chemicals will be taught those taking the course.

BLOOD DONOR DAYS

The facilities of the Wayne University Student Health Service, Detroit, beginning February 16, were turned over to a Red Cross mobile unit for the receiving of contributions of blood for as many days as are necessary to care for the volunteers. Two hundred students and faculty contributions may be accommodated by these facilities each day. The student chairman of the project is Louis McGuiness.

TEACHERS OF AIR RAID WARDENS

The Civilian Defense Institute at Wayne University, Detroit, which was organized last month, trains school teachers and industrial leaders to be teachers of air raid wardens. A class of one hundred and sixty graduated on March 12, and more than two hundred and fifty persons are studying defense organization, blackout, air raid precautions, elementary camouflage, and fire and gas defense.

CAPTAIN STEPHENSON RETURNS FROM LONDON

Capt. Charles S. Stephenson, Medical Corps, U. S. Navy, recently attached to the American embassy in London, England, addressed a meeting of the Caduceus Post of the American Legion, New York City, at the Seventh Regiment Armory, March 25, on "Military Medical Observations in England."

DR. TURNER ON DUTY IN SURGEON GENERAL'S OFFICE

Lieut. Col. Thomas B. Turner, medical reserve corps, U. S. Army, professor of bacteriology at Johns Hopkins School of Hygiene and Public Health, has been ordered to active duty in the Surgeon General's Office, Washington, D. C., as chief of the subdivision of venereal disease control.

COLONEL HILLMAN PROMOTED TO BRIGADIER GENERAL

The President sent to the Senate, January 28, for confirmation the promotion to the temporary grade of brigadier general of Col. Charles C. Hillman, M. C., U. S. Army. Colonel Hillman, who has been in charge of the professional service division of the Office of the Surgeon General, will continue his tour of duty in that office.

DR. LEE ADDRESSES ARMY OFFICERS

Dr. Roger I. Lee, Boston, member of the Board of Trustees of the American Medical Association, addressed the medical department officers in Washington, D. C., February 16, at the Army Medical Center on "The Significance and Course of Borderline Abnormalities of Blood Pressure."

ORGANIZATION SECTION

OFFICIAL NOTES

THE ATLANTIC CITY SESSION

Hotel Reservations

Fellows of the Scientific Assembly of the American Medical Association who expect to attend the annual session of the Association in Atlantic City, June 8-12, are urged to make

their hotel reservations at the earliest possible time. For such reservations, please send your first, second and third choice for a hotel reservation to Dr. V. Earl Johnson, Chairman of the Hotel Committee, 16 Central Pier, Atlantic City, N. J., in accordance with the information contained on advertising page 48 of this issue of *THE JOURNAL*.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

New York

Bills Introduced.—S. 1156, to amend the workmen's compensation law, proposes to eliminate the provision of the present law authorizing an employee or carrier to select and pay for a physician to participate in an examination of the injured employee. S. 1217 and A. 1593, to amend the labor law, propose to limit the hours of employment of an ambulance chauffeur or driver in a private hospital or other private institution to not more than eight hours a day or forty-eight hours a week except in event of an extreme emergency. S. 1271 and A. 1613, to amend the public health law, propose to authorize the commissioner to establish temporary health districts, whenever the protection of the public health so requires, and to promulgate temporary health regulations to be effective in such districts. S. 1325 and A. 1668, to amend the education law, propose to make it unlawful for any corporation, joint stock association, company, association or individual doing business under a certificate of trade name to practice podiatry. A. 1386, to amend the general business law, provides for the regulation of nurses registries throughout the state. The term nurses registry means the business of conducting a registry, office or other place for the purpose of counseling, offering, procuring, promising or attempting to procure employment or engagements of any kind, for registered professional nurses, or for licensed practical nurses, or for dietitians, anesthetists, medical secretaries or medical technicians and for which a fee is exacted or charged. A. 1399, to amend the labor law, provides that, in cities having a population of over one million, ambulance drivers shall not be permitted to work more than eight hours a day or

more than forty-eight hours a week or more than six days a week except in case of certain specified emergencies endangering life or property. A. 1642, to amend the labor law, provides that unemployment compensation benefits shall not be denied to any person who has become incapacitated through illness and who had previously qualified for benefits. A. 1673, to amend the labor law, proposes that any employee, registered as totally unemployed, who is capable of employment at the time of registration, and subsequently becomes sick, shall not be prevented from obtaining benefits under the unemployment compensation act due to inability to accept employment.

Bill Passed.—The following bill has passed the assembly: A. 964, to amend the insurance law, proposes to authorize the writing of insurance against an obligation of the insurer to pay medical, hospital, surgical and funeral benefits to injured persons, irrespective of legal liability of the insured.

Rhode Island

Bills Introduced.—H. 833 proposes to repeal the existing law relating to the licensing and regulation of the practice of veterinary medicine, surgery and dentistry. H. 836, to amend the law relating to the licensing and regulation of hair dressers and cosmetic therapists, proposes, among other things, that "hair-dresser and cosmetician" shall include a person who, by the use of the hands or appliances or of cosmetic preparations, antiseptics, tonics, lotions, creams, powders, oils or clays, engages, with or without compensation, in massaging, cleansing, stimulating, manipulating, exercising or beautifying or in doing similar work on the neck, face or arms or who removes superfluous hair from the body of any female person.

WOMAN'S AUXILIARY

California

Capt. Samuel Ross of the Fresno Air Base was guest speaker at a recent meeting of the Fresno County medical auxiliary at the University-Sequoia Club. On January 5, the group met to discuss the part which doctors' wives might play in the defense program. It was decided that a complete file of the qualifications of members and a call list be kept. Entertainment was furnished by a chorus made up of members of the evening adult education classes of Fresno High School.

Georgia

About 500 health leaders of Fulton, DeKalb and Rockdale counties attended the health education meeting sponsored by the Woman's Auxiliary to the Fulton County Medical Society recently at the Crawford W. Long Nurses' Home in Atlanta. Mrs. Jeff Richardson, chairman of health films, explained how these films can be obtained by any one interested. The new sound films and film projectors in each district are owned by the Medical Association of Georgia. Dr. W. A. Selman, counselor for the Fifth District, talked on what the association hopes to accomplish for the health of Georgians by showing the films.

The Woman's Auxiliary to the Fulton County Medical Society met recently in Atlanta with Mrs. Murdock Egan, president, presiding. Mrs. Harry Rogers, chairman of Research in Romance of Medicine, had charge of the program, which featured a talk by Dr. Sterling Clairborne on vitamins. Mrs. Allen H. Bunce gave a report on the recent meeting of the Woman's Auxiliary to the Southern Medical Association, held in St. Louis.

New Jersey

At the January meeting of the Camden County auxiliary, the members voted to increase the annual dues from \$2 to \$3. Fifty defense stamp booklets, each containing one 25 cent stamp, were sold to members at this meeting. On January 19 the auxiliary attended a "Friendship Dinner" in Camden given to encourage cooperation of the auxiliary with the women's clubs and other organizations.

The Tuberculosis Hospital at the medical center in Jersey City entertained thirty members of the Woman's Auxiliary to the Hudson County Medical Society in January. The auxiliary decided to buy a \$1,000 defense bond. Pamphlets were distributed to each member to promote individual purchase of defense bonds and stamps.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

State Medical Meeting.—The Arkansas Medical Society will hold its sixty-seventh annual meeting in Hot Springs National Park, April 27-29, under the presidency of Dr. H. Fay H. Jones, Little Rock. Sessions will be held at the Arlington Hotel. A public meeting will be held Monday evening. Out of state speakers at the scientific sessions will include:

Dr. Winthrop M. Phelps, Baltimore, The Problem of Cerebral Palsy and Its Relation to Rehabilitation and Public Health.
Dr. Walter S. McClellan, Saratoga Springs, N. Y., The Importance of Spas in Military and Civilian Defense Program.
Dr. William J. McMartin, Omaha, Goldblatt Kidney.
Dr. Lawrence T. Post, St. Louis, Aniseikonia.
Dr. Charles M. Wilhelmj, Omaha, The Etiology and Treatment of Traumatic Shock.
Mr. John M. Pratt, Chicago, National Physicians' Committee for the Extension of Medical Service.
Dr. Delmas K. Kitchen, Detroit, Sex Hormones: Physiology, Diagnosis, Therapy.

A memorial session will be held on Tuesday at the First Presbyterian Church.

CALIFORNIA

Industrial Accident Section.—The Industrial Accident Section of the Los Angeles County Medical Association observed the twentieth anniversary of its founding in March. The *Bulletin* of the Los Angeles County Medical Association recalls that in 1929 the group instituted an educational program to standardize the treatment of industrial casualties and began the publication of scientific papers for that purpose.

University President Honored.—A life fellowship in the Thomas A. Edison Foundation for the Advancement of Science and Education has been conferred on Robert Gordon Sproul, LL.D., Berkeley, president of the University of California, Science reports. The award is given to "only a few outstanding Americans in the fields of medicine, science, art and education, who have made some real contribution to human welfare." Dr. Sproul has been president at California since 1930. Until the recent appointment of Dr. Francis S. Smyth as dean of the University of California Medical School, San Francisco, Dr. Sproul had been acting dean.

CONNECTICUT

Dr. Meader to Direct Cancer Research.—Ralph G. Meader, Ph.D., assistant professor of anatomy, Yale University School of Medicine, New Haven, has been appointed assistant to the director of the Jane Coffin Childs Memorial Fund for Medical Research at Yale and will supervise the fund's activities during the absence of Lieut. Col. Stanhope Bayne-Jones, director, who has reported for duty in the Office of the Surgeon General, Washington, D. C. The Childs Memorial Fund was established at Yale in 1937 and is primarily concerned with cancer research.

Rehabilitation Clinics.—The state department of education, the state medical society and the Manufacturers Association of Connecticut are cooperating in a series of rehabilitation clinics for the purpose of employing physically handicapped persons in Connecticut factories. Groups of crippled and otherwise handicapped persons registered with the rehabilitation service of the department of education will be brought together in clinics at several points within the state, examined by a team of physicians provided by the state medical society and classified according to their occupational capabilities. Yale University is making available a staff of psychologists to administer aptitude and performance tests. The Manufacturers Association of New Haven County will be represented by a committee of employers who will aid in determining occupational fitness. A representative of the U. S. Employment Service for Connecticut will be present to facilitate referrals to employers. The applicants will then be interviewed by employment managers of Connecticut factories and placed in jobs they will be able to fill. New Haven was selected for a clinic area as an initial step. On March 15 an all day clinic was held for a minimum of twenty physically handicapped persons. Examinations were made by a group of specialists selected by the state medical society.

GEORGIA

State Medical Meeting in Augusta.—The Medical Association of Georgia will hold its annual meeting at the Bon Air Hotel, Augusta, April 28-May 1, under the presidency of Dr. Allen H. Bunce, Atlanta. The program will include symposiums on public health problems, psychoses and psychoneuroses, eye, ear, nose and throat problems and the roentgenologic problems of the gastrointestinal tract. Speakers include:

Dr. Charles W. Roberts, Atlanta, Human versus Material Values in Medical Practice.
Dr. Frank H. Lahey, Boston, Medical Problems: National, Economic and Scientific.
Dr. Thomas J. Collier, Atlanta, Crawford Williamson Long, 1815-1878.
Dr. Robert C. Major, Atlanta, Obliteration of Chronic Empyema Cavities.
Dr. Reuben M. Reiffer, Macon, Fungous Infections of the Skin.
Drs. Robert F. Norton and John T. McCall Jr., Rome, Treatment of Lung Abscess with Alcohol Intravenously.

The Abner Wellborn Calhoun Lecture will be delivered Wednesday by Dr. Perrin H. Long, Baltimore, professor of preventive medicine, Johns Hopkins University School of Medicine, Baltimore, on "Sulfonamide Therapy: Its Applications and Limitations."

IDAHO

Society News.—The Southwestern Idaho Medical Society was addressed in Boise, February 20, by Drs. Frank M. Sprague, Boise, on "Evaluation of Physical Fitness" and William W. Bauer, Director, Bureau of Health Education, American Medical Association, Chicago, "Medical Relationships to War Activities."—Dr. Dan C. McDougall discussed "Acrodynia or Pink Disease" before the Pocatello Medical Society, Pocatello, recently.

ILLINOIS

Public Health Conference.—The second annual public health conference of the Illinois Public Health Association will be held at the Hotel LaSalle, Chicago, April 20. One general session will be devoted to "Integration of Public Health and Civilian Defense." On Monday evening Dr. Roland R. Cross, state director of health of Illinois, will give an address on "Public Health in War Time" and Carl E. Buck, Dr.P.H., New York, of the American Public Health Association, "The Future of Public Health in Illinois." The luncheon session on Tuesday will be addressed by Dr. Morris Fishbein, Editor of THE JOURNAL, on "The Effect of the War on Public Health Personnel and Programs." There will be round table and panel discussions, one session for milk sanitarians and a joint bacteriology and sanitary engineering session.

CHICAGO

Lilly Prize Awarded to Biochemist.—The Eli Lilly prize of \$1,000 in biologic chemistry has been awarded to Earl A. Evans Jr., Ph.D., associate professor of biochemistry, University of Chicago, for his work which "revolutionizes thinking about the role of carbon dioxide in the animal body." Dr. Evans received his Ph.D. at Columbia University, New York, in 1936. He was assistant pharmacologist at the Johns Hopkins University School of Medicine, Baltimore, 1931-1932; assistant in endocrine research, University of Chicago, 1932-1934. He became instructor in biochemistry in 1937, assistant professor in 1939 and associate professor, July 1, 1941.

War Conference for Protection of Industrial Workers.—A war conference for the protection of workers in industrial plants was held at the Stevens Hotel, April 9-10, under the auspices of the Office of Civilian Defense of the Chicago Metropolitan Area in cooperation with the Chicago Association of Commerce and the Illinois Manufacturers' Association. The purpose of this meeting was to acquaint operators of factories, warehouses, stores and all other kinds of industrial plants with the problems of plant protection they are likely to meet under war conditions and to advise them of the kinds of internal organization they may set up in order to mesh properly with the Office of Civilian Defense organization in the metropolitan area. The following problems were discussed, among others: enemy attack by air raid or gas; sabotage, espionage and other fifth column activities; accidents, fire and other industrial hazards made acute by sustained peak production; emergency medical, hospitalization and medical services; emergency communications and guard organizations, and identification systems. Among the speakers were:

Mayor Edward J. Kelly, U. S. Coordinator of Civilian Defense, Chicago Metropolitan Area.
Sterling Morton, president, Illinois Manufacturers' Association.
Dr. Morris Fishbein, Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
Dr. Herman N. Bundesen, president, Chicago Board of Health.
Dr. Harry E. Mock, Chairman of the War Relocation Authority Council, Committee on Industrial Health.
Bennett S. Chapple, Defense Coordinator, Carnegie-Illinois Steel Corporation.

MAINE

Cooperative Program for Blood Banks.—Fourteen hospitals in Maine are cooperating in the first integrated system of blood plasma banks for civilian protection in New England communities, according to the state medical journal. Under a plan drawn up by the faculty of Tufts College Medical School, Boston, communities will receive protection in proportion to the amount of blood they donate. Collection depots will be set up in each of the fourteen community hospitals which will forward the blood to the Central Maine General Hospital in Lewiston for extraction of the plasma. On its return the plasma will be stored in the local hospital for emergency use. The Lewiston plan provides for retention of about 10 per cent of the plasma at the regional center, which will be available for use in any community which suffers a major disaster. Local hospitals in turn may retain for one or two weeks several units of whole blood for use in direct transfusions and especially for immediate protection while first plasma supplies are being processed in Lewiston. Drs. Joelle C. Hiebert and Julius Gotlieb, medical superintendent and pathologist, respectively, of the Central Maine General Hospital, and William Dameshek, assistant professor of medicine at Tufts College Medical School and chief of the Blood Clinic at the New England Medical Center, are in charge of the program. The hospitals in the Lewiston network include:

Central Maine General Hospital, Lewiston
St. Mary's General Hospital, Lewiston
Augusta General Hospital
Bath Memorial Hospital
Brunswick Hospital
Canden Community Hospital
Knox County General Hospital, Rockland
Rumford Community Hospital
Redington Memorial Hospital, Skowhegan
Sisters Hospital, Waterville
Thayer Hospital, Waterville
Miles Memorial Hospital, Damariscotta
Franklin County Memorial Hospital, Farmington
St. Andrews Hospital, Boothbay Harbor

MARYLAND

Dr. Hugh Young to Retire.—Dr. Hugh H. Young, professor of urology, Johns Hopkins University School of Medicine, Baltimore, and director of the Brady Urological Institute of Johns Hopkins Hospital, Baltimore, will retire at the end of the present academic year, June 30, with the title professor emeritus of urology. He will retain offices in the Brady Institute. Dr. Young graduated at the University of Virginia Department of Medicine, Charlottesville, in 1894. He has been associated with Johns Hopkins since 1895. In 1909 he was president of the American Association of Genito-Urinary Surgeons and of the American Urological Association and of the Medico-Chirurgical Faculty of Maryland in 1911. In 1917 Dr. Young was director of urology of the American Expeditionary Forces, becoming senior consultant in 1918. In 1929 he was named chairman of a state aviation committee which had been provided for by the legislature. In 1941 he was one of four recipients of the first award of the septennial prize of the Amory Fund for contributions to treatment and cure of diseases of the genitourinary system. The fund is distributed through the American Academy of Arts and Science.

MISSOURI

Dinner for Honorary Members.—The Jasper County Medical Society recently gave a dinner for its honorary members, Drs. Robert L. Neff, Robert M. James and William S. Loveland, Joplin, and Everett Powers, Carthage. Dr. William R. Gaddie, Duenweg, also an honorary member, died on January 11.

The Carman Lecture.—Dr. Leo George Rigler, professor of radiology, University of Minnesota Medical School, Minneapolis, delivered the annual Russell D. Carman Lecture in St. Louis, February 24, under the auspices of the St. Louis Society of Radiologists. His subject was "Roentgenological Diagnosis of Acute Abdominal States."

Memorial for Pioneer Physician.—On March 28 a granite headstone was unveiled at the grave of Dr. Joseph Nashe McDowell in Bellefontaine Cemetery. The stone was made possible by the contributions from about two hundred physicians and is a memorial from the class of 1895 of Missouri Medical College, St. Louis. The stone was unveiled by Mrs. Rebecca Duane Mastin, daughter of Dr. and Mrs. Edward V. M. Mastin, St. Louis, and great-great-granddaughter of Ephraim McDowell, the uncle of Joseph Nashe McDowell. Philip A. Shaffer, Ph.D., dean of Washington University,

School of Medicine, and George R. Throop, Ph.D., chancellor of the university, spoke at the ceremonies. Dr. McDowell came to St. Louis from Cincinnati, where he had been associated in the Cincinnati College of Medicine. He established the medical department of the Kemper College, later changed to the Missouri Medical College.

NEBRASKA

Personal.—Dr. James A. Burford has resigned as superintendent of the Nebraska Institution for Feeble-minded at Beatrice. Harold Peterson, secretary of the state board of control, is the new superintendent.—Dr. Charles L. Falmesstock, Lincoln, was appointed supervisor of the state WPA public health projects on February 1.

Course on Obstetrics and Pediatric Care.—A series of lectures on obstetrics and pediatrics will be held at different centers throughout the state from April 13 to April 24 under the auspices of the state medical association and the state department of health. Lecturers will be Drs. Norman R. Kietzschmar and Harry L. Towlsey, associate professors of obstetrics and pediatrics, respectively, University of Michigan Medical School, Ann Arbor. The series will open in Alliance on April 13 and continue at the following places: Scottsbluff, April 14; North Platte, April 15; McCook, April 16; Grand Island, April 17; York, April 20; Fremont, April 21; Norfolk, April 22; Nebraska City, April 23; and Falls City, April 24.

NEW JERSEY

Immunization Program.—March 30 marked the start of a program among preschool children in Newark for the administration of a serum designed to provide simultaneous immunization against diphtheria and whooping cough, according to the *New York Times*. Trial tests for a period of eighteen months carried out by Dr. Henry Simon, head of the respiratory bureau of the city department of health, were said to be beneficial to 840 children. The *Times* reported that there have been no deaths from diphtheria in Newark during the last two years during the city's concentrated immunization program. Among the 2,000 children afflicted with whooping cough annually there are an average of eight deaths. The service is to be free but parents desiring to do so may take the children to family physicians.

NEW YORK

Course on Sulfonamide Therapy.—The Medical Society of the State of New York and the state department of health have arranged a course of three two-hour sessions on sulfonamide therapy for the Orange County Medical Society, to be given at the Elizabeth A. Horton Memorial Hospital, Middletown. On May 12 Drs. Alexander D. Langmuir, Peeks, kill and Frank Glenn, New York, will discuss "Behavior of Sulfonamides in the Body and Principles for Their Use" and "Local and Internal Use of Sulfonamides in Surgery." On May 19 Drs. Thomas F. Laurie, Syracuse, will speak on "Treatment of Genitourinary Infections in the Male" and Robert Gordon Douglas, New York, Sulfonamides in Obstetrics and Gynecology." On May 26 Drs. L. Whittington Gorham, Albany, and Harry Bakwin, New York, will discuss "Treatment of Pneumonia" and "Treatment of Meningitis" respectively.

New York City

The Seventh Harvey Lecture.—Dr. Philip D. McMaster of the Rockefeller Institute for Medical Research will deliver the seventh Harvey Society Lecture of the current series at the New York Academy of Medicine, April 16. He will speak on "Lymphatic Participation in Cutaneous Phenomena."

Fund for Psychiatry.—Under the will of the late Dr. Menas S. Gregory, New York University College of Medicine has received a fund of \$40,000. Twenty thousand dollars will be used to establish an annual lectureship and the remaining \$20,000 will be given toward the endowment of a professorship in the department of psychiatry. Dr. Gregory was for many years professor of psychiatry at the medical school.

Musical Society.—The Doctors Musical Society of Brooklyn will offer its sixth concert at the Grand Ballroom of the Hotel St. George, Brooklyn, May 13, under the auspices of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn. Committee on Social Activities in cooperation with the Hotel St. George. Proceeds will go to the mobile canteen unit for Brooklyn. Myron Leuter will conduct.

OHIO

Physician Named to Welfare Post.—Dr. Charles T. Dolezal, assistant clinical professor of medicine, Western Reserve University School of Medicine, has been appointed welfare director of Cleveland. According to the state medical journal, this is the first time that a physician has been named to the position. Dr. Dolezal graduated at Western Reserve in 1926.

Dr. Bigelow Named Acting Dean at Ohio State.—Dr. Leslie L. Bigelow, clinical professor of surgery at Ohio State University College of Medicine, Columbus, has been appointed acting dean of the school. He succeeds Dr. Hardy A. Kemp, dean since Sept. 1, 1941, who as a major in the medical reserve corps of the U. S. Army has been called into active service at the Army Medical School, Washington, D. C. Dr. Bigelow has been a member of the faculty at Ohio State since 1914; he was named to his present professorship in 1938. He formerly served as president of the Columbus Academy of Medicine and the Ohio State Medical Association. Dr. Kemp will teach tropical diseases at the Army Medical School, it is reported.

State Medical Meeting in Columbus.—The Ohio State Medical Association will hold its ninety-sixth annual session at the Neil House, Columbus, April 28-30, under the presidency of Dr. Harry V. Paryzek, Cleveland. The program includes the following out of state speakers:

- Dr. Chester S. Keefer, Boston, Chemotherapy.
- Dr. Frederick A. Collier, Ann Arbor, Mich., Simplified Parenteral Feeding Before and After Operation.
- Dr. Richard H. Freyberg, Ann Arbor, Recent Trends in the Treatment of Rheumatoid Arthritis.
- Dr. William G. Lennox, Boston, New Light on Epilepsy and Migraine.
- Dr. Alton E. Braley, New York, Sulfonamides in the Treatment of Ocular Infections.
- Dr. Tinsley R. Harris, Winston-Salem, N. C., Hypertension: Some Recent Advances.
- Dr. Leonard G. Rowntree, Colonel, M. C., U. S. Army, Washington, D. C., Health and National Defense.
- Edmund V. Cowdry, Ph.D., St. Louis, Factors in Aging of the Human Body.
- Dr. Frank H. Krusen, Rochester, Minn., Physical Therapy in General Practice.
- Dr. Merrill C. Sosman, Boston, Observations on Curable Heart Disease.
- Dr. John H. Lawrence, Berkeley, Calif., Clinical Applications of Artificial Radioactivity.

A feature of the meeting will be "quiz discussion" sessions covering chemotherapy, preoperative and postoperative care, nervous and mental diseases, nutrition and national defense, technical phases and clinical applications of plasma transfusions, general medical problems and physical therapy, including x-ray, radium and radioactive isotopes. There will be a continuous program of medical motion pictures. At the annual banquet Thursday evening Roderick Peattie, Ph.D., geographer and author and professor of geography, Ohio State University, Columbus, Ohio, will speak on "The Significance and Limitations of Geopolitics." The woman's auxiliary to the state medical society will meet on April 29 and 30. Other meetings will include the Ohio section of the American College of Chest Physicians, April 29, and a joint meeting of the Ohio Society of Anesthetists and the Ohio section of the American Society of Anesthetists, Inc., April 30.

OKLAHOMA

State Medical Meeting in Tulsa.—The Oklahoma State Medical Association will hold its fiftieth annual session at the Coliseum, Tulsa, April 22-24, under the presidency of Dr. Finis W. Ewing, Muskogee, and with the Tulsa County Medical Society acting as host. Included among the speakers will be the following:

- Dr. Charles C. Dennis, Kansas City, Mo., Treatment of Pregnant Syphilitic Women and the Results of Treatment.
- Dr. George R. Hermann, Galveston, Texas, Functional Heart Disorders, Including the Soldier's Heart.
- Dr. Morris Edward Davis, Chicago, The Endocrines in Obstetrics and Gynecology.
- Dr. Algernon B. Reese, New York, Exophthalmos Associated with Thyroid Disease.
- Dr. John C. Burch, Nashville, Tenn., Physiologic Approach to Gynecology.
- Dr. Hugh L. Dwyer, Kansas City, Mo., Protection of Children Against Tuberculosis.
- Dr. Robert L. Sanders, Memphis, Tenn., Carcinoma of the Colon.
- Dr. Titus H. Harris, Galveston, Complications Following the Use of Dilantin.
- Dr. Thomas Leon Howard, Denver, Malignancy of the Bladder and Prostate with Reference to New Methods of Treatment.

The guest speakers will address both sectional and general sessions. A feature of this year's meeting will be a round table on sulfonamide therapy, in which all the guest speakers will participate.

PENNSYLVANIA

Personal.—Dr. Jeremiah Fletcher Lutz and Dr. Francis R. Wise of York have been appointed chairman and co-chairman, respectively, of Emergency Medical Service of York and York County.

Philadelphia

Immunization Program in Scarlet Fever Outbreak.—New clinics for the immunization of children against scarlet fever are being established throughout the city to cope with the disease which has been epidemic for several weeks, newspapers report. The city department of health has augmented its staff with the appointment of Dr. Harry Strieb as immunologist. Two other physicians and ten nurses have also been added to assist in the outbreak. Fifty-five new cases on March 21 brought the total for the year up to 2,036 and for the month of March to 878.

Dinner to Dr. Babcock.—Dr. William Wayne Babcock, since 1903 professor of surgery and clinical surgery, Temple University School of Medicine, was guest of honor at a dinner, March 26, given by citizens of Philadelphia, trustees of Temple University and the faculty and alumni of the medical school as an "expression of appreciation of Dr. Babcock's accomplishments and contributions to Temple University, Temple University Medical School, and the city of Philadelphia." Participating in the dinner were the Babcock Surgical Society, the Nurses Alumni Association and the entire student body of the medical school. Dr. Babcock has been affiliated with various institutions in Philadelphia since 1895.

Society News.—Dr. Francis L. Lederer, Chicago, discussed "Signs and Symptoms of Labyrinthitis—Their Surgical Implications" before the Philadelphia Laryngological Society March 10.—The Philadelphia Psychiatric Society was addressed, March 13, by Dr. Francis J. O'Brien, New York, on "Psychiatry in Education."—The Pathological Society of Philadelphia was addressed, February 12, by Drs. Baldwin H. E. W. Lucke and Hans G. Schlumberger on "Tumors in Cold Blooded Animals as Experimental Material for Studies on Neoplasia" and Dr. Dale Coman, "Human Neoplasia in Tissue Culture." All are of Philadelphia.—Dr. Louis Chargin, New York, among others, addressed the Philadelphia County Medical Society, February 11, on "Massive Dose Arsenotherapy in Syphilis."

TENNESSEE

New Professor of Pediatrics.—Dr. Walter Henry Maddux, now completing graduate studies at Yale University School of Medicine, New Haven, has been appointed professor of pediatrics at Meharry Medical College, Nashville, newspapers report. Dr. Maddux graduated at Rush Medical College, University of Chicago, in 1923.

State Medical Meeting in Memphis.—The Tennessee State Medical Association will hold its annual session at the Peabody Hotel, Memphis, April 14-16, under the presidency of Dr. Hiram A. Laws, Chattanooga. According to a preliminary program, the following guest speakers will participate:

- Dr. Robert J. Reeves, Durham, N. C., Diagnosis and Treatment of Pulmonary Fungus Infection.
- Dr. James S. Mc Lester, Birmingham, Ala., Nutrition and Defense.
- Dr. Carl M. Peterson, Chicago, Secretary, Council on Industrial Health, American Medical Association, Industrial Health and the Practicing Physician.
- Dr. C. Anderson Aldrich, Winnetka, Ill., Ancient Processes in a Scientific Age—Feeding Aspect.
- Dr. Fred Rankin, Lexington, Ky., President-Elect, American Medical Association (subject not announced).
- Dr. Edgar H. Greene, Atlanta, Ga., The Procurement and Assignment Service.

Other groups meeting simultaneously with the state society are the Tennessee Academy of Ophthalmology and Otolaryngology and the Tennessee State Pediatric Society. Dr. William A. Garrott, Cleveland, will be guest speaker before the ophthalmologic group.

TEXAS

Medical Officer Prisoner of War.—Dr. Gustav Mason Kahn, Galveston, medical officer, U. S. Navy, stationed at Lake Island, is reported to be a prisoner of war, according to the Galveston News. Dr. Kahn graduated at the University of Texas Faculty of Medicine in 1932.

Changes of Health Personnel.—Dr. Paul L. Vermer, Gilmer, has been named health officer of Upshur County. Dr. Stephen W. Wilson, Gilmer, was recently chosen director of the new city health unit at Atlanta. Dr. Hatch W. Cummings is the new health officer of Hearne.—Dr. William B. Patterson, Brownfield, is the new director of the five county health unit serving Dawson, Hockley, Yoakum, Gaines and Terry counties, with headquarters in Brownfield.

GENERAL

Special Society Election.—Dr. Herman C. Pitts, Providence, R. I., was elected president of the American Society for the Control of Cancer at its annual meeting in New York in March. Other officers are Dr. Frank E. Adair, New York, vice president; Dr. Cornelius P. Rhoads, New York, secretary; James H. Ripley, New York, treasurer, and Clarence C. Little, Sc.D., Bar Harbor, Maine, managing director.

Meeting of Gastroscopic Club.—The recently organized American Gastroscopic Club will hold its first annual meeting in Atlantic City, June 7, with headquarters at the Hotel Claridge, when the following program will be presented:

- Dr. Rudolf Schindler, Chicago, Introduction—On Chronic Epigastric Distress and on the Anatomic Foundation of Chronic Gastritis.
- Dr. Crawford F. Barnett, Atlanta, Gastroscopic and Clinical Symptoms of Chronic Superficial-Atrophic Gastritis.
- Dr. Edward B. Benedict, Boston, Gastroscopic and Clinical Symptoms of Chronic Hypertrophic Gastritis.
- Dr. George B. Eusterman, Rochester, Minn., Clinical Significance of Chronic Gastritis.
- Dr. Seymour J. Gray, Chicago, Epigastric Symptoms in Alcoholics With and Without Gastritis.
- Dr. John Tilden Howard, Baltimore, Gastroscopic Findings in Cholecystectomy Patients.
- Dr. John L. Kantor, colonel, M. C., U. S. Army, New York, Significance of Chronic Dyspepsia for the Army in World War I.
- Dr. Rubin L. Gold, captain, M. C., U. S. Army, San Francisco, Gastroscopic Findings in Chronic Dyspepsia in the Army.
- Dr. Frank B. McGlone, captain, M. C., U. S. Army, Denver, Incidence of Gastritis in Draftees, Soldiers and War Veterans.

Courses in Kenny Treatment of Paralysis.—A series of courses in the Kenny method of the treatment of early poliomyelitis will be conducted in Minneapolis under the supervision of Dr. Miland E. Knapp, director of the department of physical therapy, University of Minnesota Medical School, Minneapolis. The courses will be financed by the National Foundation for Infantile Paralysis. They have been arranged for physicians, registered physical therapy technicians, nurses with responsible positions in teaching institutions and nurses in key positions in large contagious disease hospitals. The classes will be repeated at various times in the next six to twelve months. The physicians' course is to be of one week's duration and limited to fifteen physicians although it will be repeated from time to time as the demand requires. The course for nurses from contagious disease hospitals is also of one week's duration. The course for registered physical therapy technicians, preferably technicians who have also had nurses' training, and for nurses in teaching institutions is of two to six months' duration. It is recommended that each institution contemplating the inclusion of the Kenny treatment in its program send a physician, a technician and a nurse for training. Inquiries concerning fees and dates of courses should be sent to the Director, Center for Continuation Study, University of Minnesota, Minneapolis.

Report of Rockefeller Foundation.—More than \$9,000,000 was appropriated by the Rockefeller Foundation during 1941, mainly in the six major fields of public health, medical sciences, natural sciences, social sciences, humanities and program in China. The work in public health received the largest appropriation, \$2,450,000. Medical sciences was second with \$2,120,000. Of the money spent, 74 per cent was for work in the United States and 26 per cent for work in other countries. The largest appropriation made by the foundation in 1941 was \$600,000 toward the endowment of the department of public health and preventive medicine of Cornell University Medical College, New York. During the year the Rockefeller Foundation supported four hundred and twelve fellowships for citizens of thirty-four different countries at a cost of \$594,000; one hundred and eighty-one persons studied in countries other than their own. Fellowships for Latin Americans increased by 52 per cent over 1940; fellowships for Europeans, already at a low figure in 1940, decreased by 40 per cent. The fields represented in the two hundred and seventy-six fellowships administered directly by the foundation were public health one hundred and seven, public health nursing twenty-two, medical sciences fifty-three, natural sciences eighteen, social sciences twenty-six, humanities forty-one and the program in China nine, not including local fellowships for study in China. Two thousand three hundred and seventy-eight applications for financial aid were declined.

The foundation distributed 1,938,300 doses of yellow fever vaccine to the United States government and 1,972,380 doses to Africa. Including the total that went to India, Brazil and Singapore, the foundation gave a grand total of 4,260,680 doses of its own manufactured yellow fever vaccine. At the request of the army and navy, several million more doses will be distributed this year. Reflecting the action of the war on its activities, the foundation closed its Paris office in June 1940 and its Lisbon office in July 1941. There are now no founda-

tion representatives on the continent of Europe, but an office is being maintained in London. Late in 1940 the Far Eastern office was moved from Shanghai to Manila. Peiping Union Medical College was closed by the Japanese authorities early in 1942 and the leading members of the staff were interned.

Emphasis is being placed on studies of malaria, typhus and yellow fever. In Trinidad, where malaria is the most urgent health problem, a study is being made in the civilian population. Another malaria project is on the Burma Road. A laboratory has been established directly on the road, and under war circumstances the project has encountered difficulties. A new technic was developed for measuring antibodies in the blood before and after vaccination for influenza, and eleven different types of vaccines have been prepared and tested in human volunteers. Special studies have been carried out in nutrition. One project was instituted in England in 1941 with the Ministry of Health and the Oxford Nutrition Survey.

The foundation gave \$110,000 to the American Library Association to forestall the growth of serious gaps in the files of American scholarly journals in the libraries of war affected countries. A grant in aid was also given to expedite the flow of similar material from Europe to the United States.

The foundation appropriated \$168,000 to the National Research Council to establish the Welch Fellowships in honor of the late Dr. William Henry Welch, Baltimore. This program will support a plan of senior fellowships in internal medicine, offering long training and adequate stipends to carefully selected men from 30 to 40 years of age. Stipends will not exceed \$6,000 annually; in addition, allowances not to exceed \$1,000 a year will be made for equipment and technical assistance. The first appointment will be for a period of three years, and subsequent appointment will be at the discretion of the council up to a total term of six years for each fellow. Fellowship holders will be free to move to the clinics best equipped to train them.

To develop a center in the United States for the study of tropical diseases, the foundation in 1941 gave \$200,000 to the Tulane University of Louisiana School of Medicine, New Orleans.

LATIN AMERICA

New Public Health Journal.—The *Revista do Instituto Adolfo Lutz*, the official journal of the Central Laboratory of Public Health of São Paulo, has made its appearance. The first issue was dated July and the second December 1941. Dr. José P. Carvalho, Lima, is editor of the journal. The institute which the new publication serves bears the name of the late Adolfo Lutz, Rio de Janeiro, who for many years was the director of the Institute Bacteriológico of São Paulo, which was later transformed into the Central Laboratory of Public Health.

National Tuberculosis Committee.—A National Committee was recently organized in Argentina for the government campaign against tuberculosis. It will have headquarters in Buenos Aires and will direct and intensify the national crusade against tuberculosis. It will also manage the various problems related to the control of the disease in the country. Drs. Alejandro A. Raimondi and Rodolfo A. Vaccarezza, professors at the Faculty of Medicine of the University of Buenos Aires, were appointed president and secretary, respectively, of the National Committee against tuberculosis.

CORRECTIONS

St. Francis Hospital.—In the Hospital Number of THE JOURNAL, March 28, page 1088, the symbol * indicating approval for residency, intended for St. Francis Hospital, Wichita, Kan., was mistakenly placed on St. Francis Hospital, Topeka, Kan.

Milk Borne Outbreak of Septic Sore Throat.—In a news item in THE JOURNAL, March 28, page 1151, reporting an outbreak of septic sore throat, the last sentence of the story should have read: Strains of hemolytic streptococci belonging to Lancefield serologic group A were isolated from the milk of the injured cow, from throat cultures from the milk handler and from a number of patients.

Barre City Hospital, Barre, Vermont.—In the Hospital Number of THE JOURNAL, March 28, page 1126, Barre, Vermont, and its hospital facilities were by typographical error placed under Utah. Barre, a city of 10,909 population in Washington County, has the Barre City Hospital, gen., N. P. Acon., 60 beds, average census of 50; 15 bassinets; 322 births; 2,043 admissions; approved by American College of Surgeons and State Board of Nurse Examiners. Also Washington County Tuberculosis Sanatorium, state owned; 47 beds; average census of 42; 64 admissions. Both fully registered and not "ated" institutions.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 21, 1942.

Reduction in the Medical Staff of Hospitals

The minister of health has decided to reduce the medical staff of hospitals so as to provide more medical officers for the fighting forces. Whole time members of the staff are to be reduced by 15 per cent in London and by 10 per cent in the provinces. In the teaching hospitals the reduction will be smaller. In a circular the minister points out that this lowering of the numerical standard of staffing in hospitals calls for a maximum degree of cooperation between hospitals in time of pressure. He has therefore instructed his medical officers in each civil defense region to work out plans whereby hospitals heavily pressed by air attack or exceptional incidence of sickness in the locality can be given relief by other hospitals. Some arrangements of this kind already exist but the minister wants them to be general and on a clearly defined basis. He has in mind the allocation of specified officers in each hospital for temporary transfer in case of need. The period of transfer would usually be short, perhaps not more than a week. The arrangement should also include nurses.

American Hospital Built to Withstand Air Raids

The new Churchill Hospital is to be opened at Oxford. It will be administered by a group of American surgeons who arrived in England on the first day of the air raids on London. The hospital was built in 1941 and therefore is the first to be built with the horrors of modern warfare in mind. It is so designed that a bomb could do no great damage to the hospital as a whole. The wards are built round a courtyard, each ward having its own air raid shelter. Six hundred patients can be accommodated. The staff comprises twelve American doctors and fifty American and Canadian nurses. Its main function will be reconstruction, of which the two branches will be orthopedic and plastic. A medical service and other types of surgery will be provided as necessity arises. After the war it is intended, if possible, to keep the hospital as a permanent American hospital in relation with the Oxford Medical School. It is hoped that a similar British organization may be initiated in relation with a university in the United States.

War Injuries of the Eye

The indiscriminate bombing of cities has produced many cases of injury to the eye. At a meeting of the Section of Ophthalmology of the Royal Society of Medicine Mr. T. M. Tyrrell opened a discussion on the subject. He found that peace time methods of treatment did not apply well in war time. Some of the cases he had been unable to deal with at once and then learned the possibility of leaving a badly injured eye for twenty-four hours and getting a good result. He found in several cases that it was easier to deal with those which had to wait, and consequently he purposely began to leave patients unoperated on and found that results were apparently better. In the past he had been impressed by the degree of shock and restlessness of patients with perforating injuries and the need for a good seventh nerve block before thorough examination or operation. After the lapse of time the shock passes off and the patient is in a better condition to stand operation. This applies with even more force to air raid casualties in which there is more shock than in civil cases of eye injury. The dirt appears to have been blown deep into the skin and the conjunctival sacs are usually filled with a slimy mudpie of mucus and dirt. It is well to subject all these eyes to two or three hourly irrigations with an alkaline lotion before any

operative intervention and at the time of operation to irrigate the conjunctival sac with 2 per cent silver nitrate long enough to produce a slight white film over the cornea. This forms a protective coat over particles which may be embedded in the cornea or conjunctiva and helps to prevent infection.

In nonpenetrating injuries all glass must be picked out of the conjunctival sac. Nearly all wounds of the lids become infected. Mr. Tyrrell cleans them with hydrogen peroxide and cuts out all obviously damaged tissue unlikely to survive. When there are multiple corneal foreign bodies he does not touch them. These patients are soon comfortable if the pupils are kept well dilated with oily atropine 0.5 per cent and later with "paroline drops." The foreign bodies rapidly fall out, and any left can be picked out later.

Glass injuries are the chief bugbear of air raids. To prevent them, firemen and fire watchers should have a protective visor. It is very difficult to see glass even with a slit lamp and more difficult to extract. Fortunately in most cases glass works its way out even from the depths of the wound. Most glass injuries are so liberally peppered with small fragments that any attempt to roentgenograph them in looking for an intraocular fragment fails because of the cloud of other small pieces. In cases of a piece of glass lodged in the eye which shows no tendency to come out, the only indication for operation is interference with vision in an otherwise useful eye. Mr. Tyrrell has had about twenty severe glass injuries and has had to remove ten eyes too pulped to be saved. In the majority of the others, glass had perforated the cornea or sclera and fallen out again, and all that was necessary was a clean up, iridectomy and conjunctival flap.

The Effect on the Kidney of Limb Compression

In a previous letter a new syndrome—renal failure produced by prolonged compression of limbs by debris of buildings fallen during air raids—was reported. In a discussion at the Section of Surgery of the Royal Society of Medicine the president, Mr. E. Rock Carling, said that so far the war had furnished few new surgical problems, but an outstanding observation was the grave and often fatal damage to the kidneys after prolonged compression of the limbs. It was impossible to believe that a similar syndrome had not been associated with injuries in civil life, such as mine accidents. Little had appeared on the subject in English literature, but cases had been found in German literature.

Dr. J. McMichael said that the breakdown of autolytic products from dead or dying muscle seemed to be the main factor in damaging the kidneys. Some chemical substance was liberated and poisoned the tubule cells. There was also a tubule blockage, possibly from precipitation of myohemoglobin in the tubes. In crush injuries the kidney should be thought of from the first. The mistake had been made of waiting until about the third day, when renal damage was already severe, before treating the renal condition. It should be impressed on rescue parties that in persons pinned down by the limbs under wreckage the danger was renal failure. Therefore it was important to insure good diuresis, particularly about the time the injured were due to be released from pressure. Every effort should be made by means of abundant warm drinks to secure a good urinary flow. The diuresis would dilute the chemical substances within the renal tubules and perhaps prevent precipitation of myohemoglobin casts. Once the victim was released the circulation was likely to be flooded with toxic products, and therefore a more rational method of treatment was necessary. He did not think that any severe additional damage would be produced by the immediate application of a tourniquet. It should be applied to the limb above the site of crushing. When the patient reached the hospital the circulation through the limb should be restored only when good diuresis was established. Gradual release of the circulation might be attempted

by replacing the tourniquet by the sphygmomanometer cuff and slowly deflating. Possibly the limb vessels were already in spasm, so that these measures would achieve little. Another expedient was to pack the limb in ice so as to reduce the blood flow through the limb and diminish the rate of tissue breakdown, dependent on the action of enzymes, which acted best at about body temperature. The next point was alkalization of the blood or urine, because these patients tended to have a low alkali reserve. Administration of alkalis in quantities sufficient to make the urine alkaline was rational. Sodium bicarbonate and citrate should be given by mouth in quantities of 200 to 300 grains (13 to 20 Gm.) daily. The use of the sodium salt was important, because the high concentration of potassium in the blood of these patients might be one of the fatal biochemical factors. Good diuresis, of course, could not be maintained in the presence of circulatory collapse, and shock should be treated by serum or plasma transfusion. In our present state of knowledge these suggestions were only tentative.

The Bread Controversy

The adoption of white bread seems to have been a blunder. Reform is far from easy and the way is blocked by public taste. In a letter to the *Times*, Lord Bledisloe, minister of food, says that an unfortunate development of democracy is that the taste of the proletariat, however noxious, becomes reflected in large scale industrial enterprise. No better illustration can be given than the craze for the white loaf because it is white, light and relatively durable, and the response to it by the modern steam roller mills eliminating from our bread the appetizing germ and the finer skins of the wheat grains with their minerals and vitamins.

The policy of the minister of food continues to be severely criticized in the *Times* and in the medical journals. Sir Wyndham Dunstan attacks his decision to fortify the white loaf with manufactured vitamin B₁ and calcium. The expense is \$6,250,000, which is to be spent on the manufacture of the vitamin and \$5,000,000 on distribution and incorporation in the daily bread supply. This reinforced bread is unnecessary, now that the standard wheatmeal loaf is available. Dr. Harris, Director of the Institute of Research for the Prevention of Disease, writes that calcium taken in excess affects the function of the kidneys and may easily prove a factor in hardening of the arteries. To put it at its lowest, the addition of calcium to bread would mean that forty million people would be used as experimental rabbits. That redoubtable controversialist Sir Ernest Gordon Graham-Little (dermatologist and member of Parliament) still maintains that the recommendations of the Medical Research Council for the new national loaf of 85 per cent extraction (against the usual 73) should not be carried out. Though there may be 85 per cent extraction, the flour is often still deprived of practically all the germ. Graham-Little says that "95 per cent of the flour controlled by the ministry is deprived of all its wheat germ and is chemically bleached, flouting the two principal recommendations of the Medical Research Council."

Nurseries for Children of War Workers

A large number of women are now engaged in war industries, and many of them are married and have young children. The London Women's Parliament has decided to send a deputation to the ministers of health and of education to emphasize the need for the provision of nurseries for war workers' children. Many mothers with recent factory experience are eager to return to work but have no one to take care of their young children. The solution is the rapid establishment of war time nurseries in large numbers and big extension of residential nurseries, preferably in reception areas.

Precautions Taken Against Typhus Fever

Typhus fever is ravaging a large part of Europe, including the eastern war front, Poland, the Baltic states, Germany, the Ukraine and Spain. It has also appeared in northern Africa. The British government has already taken precautions, which include arrangements for the supply of vaccine and the setting up of laboratories in the Middle East. On the home front the public health services have made preparations by which local authorities could carry out immediate large scale inoculation. At the ports, precautions have been taken to prevent the spread of the disease to this country.

PARIS

(From Our Regular Correspondent)

Feb. 21, 1942.

The Treatment of Epilepsy with Phenytoin

Prof. Charles Baudouin, dean of the faculty of medicine in Paris, read a paper before the Academy of Medicine, March 4, 1941, on the treatment of epilepsy by means of phenytoin sodium. During a trip to the United States in November 1937 he visited the medical services of Drs. Tracy J. Putnam and H. Houston Merritt in Boston, where he became acquainted with the new antiepileptic medicament. Drs. Merritt and Putnam in the Sept. 17, 1938 issue of *THE JOURNAL* published an article entitled "Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders." The product, introduced as dilantin in the United States, is known in Europe as epanutin. Professor Baudouin's experimentation with this product in 1940 was resumed by means of a French firm's product, using phenytoin and its sodium, calcium and magnesium salts. Professor Baudouin prefers the use of phenytoin itself because, compared to its derivative sodium, it is insoluble in water and unalterable in air. By administering from 0.3 to 0.5 Gm. daily as a cachet or as a compressed tablet of 0.1 Gm. to 13 patients he has not observed any nervous sequels, vertigo or digestive troubles. An erythrodermia was observed, but it quickly vanished after discontinuance of the drug. Of 13 epileptic patients 12 were resistant to phenobarbital or bromide treatment. In 5 grand mal cases three good results and one failure were observed. Among the 6 patients having petit mal attacks one excellent result, one good one, two improvements and two failures were observed. Professor Baudouin proposes not to omit phenobarbital entirely while treating epilepsy with phenytoin. Good results have been generally obtained by the combination of 0.1 to 0.15 Gm. of phenobarbital with 0.3 Gm. of phenytoin. Phenytoin is less hypnotic than phenobarbital.

Depressive Cardiovascular Action Caused by Phenytoin

At a meeting of the Academy of Medicine on July 8, 1941 Professor Baudouin reported an experiment on dogs with intravenous injections of phenytoin and its sodium derivative. The action of phenytoin and phenytoin sodium proved to be identical. In doses of 0.005 Gm. per kilogram a slightly depressive cardiovascular action can be observed. This inhibitory action is more evident at the auricle than at the ventricle (electrocardiogram). The arterial pressure is lowered and slackening of the rhythm until momentary cessation of heart action can be observed. Up to a dose of 0.02 Gm. these actions are temporary and reversible. Injection successively of the total dose of 0.04 to 0.06 Gm. may cause death. To this vagomimetic action, which is probably of central origin, a directly depressive muscular effect is still added. After the vagus has been cut, phenytoin always proves to be inhibitory. No changes are seen when sparteine is administered. Certain calcium salts, however, which affect the muscles directly as cardiotonics fight efficiently against the depressive action of phenytoin. Intravenous injections of this medicament to human beings are not feasible.

BUENOS AIRES

(From Our Regular Correspondent)

Feb. 25, 1942.

Tuberculosis

Dr. Luis Sayé of Buenos Aires recently read a paper in which he discussed tuberculosis, which continues to be a main cause of mortality in all countries of the world except five or six. The epidemic cycle of the disease from acute to attenuated forms lasts from thirty to more than one hundred years. The curve of mortality follows three different patterns for the three different phases of (1) tubercularization, (2) relative stabilization of the disease with slow diminution of the curves of mortality and (3) rapid diminution of the curves. The highest rate of mortality corresponds to patients of about 30 years of age. There are malignant clinical forms with a tendency to generalization of the disease. This epidemiologic phase predominates in Portugal, Greece, the northern, central and southern regions of Africa, Asia, Oceania, Venezuela, Brazil, Ecuador, Peru, Chile, Colombia and Bolivia. In the phase of relative stabilization of the disease the rate of mortality from tuberculosis varies between 10 and 16 per 10,000 people. Switzerland, Finland, Belgium, France, Spain, Italy, Argentina, Uruguay, Mexico and Cuba had tuberculosis in this phase in 1937-1938. In the phase of rapid diminution of the disease the rate of mortality from tuberculosis varies from 4 to 10 per 10,000 people. The frequency of this type of tuberculosis in infants and school children is rare. Complete infection is exhibited in patients between the ages of 40 and 50. The curve of mortality in men and women is similar. The age of greatest mortality for either men or women is between 40 and 80 years. England, Sweden, Norway, Denmark, the Netherlands, Germany, the United States, New Zealand and Australia had tuberculosis in this phase in 1937 and 1938. The results of crusades against tuberculosis show how much can be expected from work on prevention of the disease when it is carried on properly and in proportion with the needs. The good results obtained in preventing tuberculosis in the United States by controlling the diseases in cattle are recognized.

In countries in which well coordinated crusades on public hygiene are carried on, as is the case in Venezuela, the intensification of work for prevention of tuberculosis will cause a rapid lowering of the endemic curves of the disease.

In the United States, the Netherlands, Denmark, New Zealand and Australia the incidence of tuberculosis has greatly diminished in the last ten years. One wonders whether the disease will disappear from those countries within the coming twenty years. The insufficient results of antituberculosis crusades are shown by the frequency of tuberculosis in women between the ages of 16 and 35. Roentgenograms have been systematically taken of several thousand persons who lived in the poor districts of New York and Chicago in the course of antituberculosis crusades. It is found that tuberculosis is frequent among adolescents, Negroes and industrial workers who live in poor districts of large cities. The results of this research indicates the advisability of complementing the antituberculosis crusades (1) with the administration of antituberculosis vaccines to noninfected persons, (2) by carrying on periodic roentgen examinations of the thorax of persons exposed to tuberculosis and, if possible, of the thoraces of persons of the entire city and (3) by controlling tuberculosis in birds, hogs and other animals.

REHABILITATION OF TUBERCULOUS PATIENTS

Drs. F. Etcheverry Boneo and L. L. Silva recently published an article in the *Revista de Kinesiología* on the importance of medical gymnastics in rehabilitating patients after clinical cure of pulmonary tuberculosis. The exercises begin after discontinuation of prolonged rest and progress as follows: The patient, sitting on a chair, performs mild movements of relaxa-

tion of the muscles of the neck, thorax and arms, with closed eyes. He moves first the fingers, then the hands, forearm, elbow, arm and head. He breathes according to the rhythm of certain sounds. The exercises are performed for five minutes every other day for one month. Then the exercises are repeated every other day but more energetically and for ten minutes. Creeping and other movements of the legs are also performed during the second and third series of exercises. The treatment is repeated once more. This time the patients stand while performing the exercises, which should be energetic and mild in alternation. The exercises should be modified for patients who have structural changes of the thorax from an operation. The duration of the second and third series of exercises depends on the variations of the pulse, the weight and clinical symptoms. The frequency of the pulse should not change, or it should diminish immediately after the exercises. The authors administered the treatment to 235 patients with apparent clinical cure. The treatment of 25 patients was discontinued early in its course with reappearance of clinical symptoms. In these cases the exercises were a test for apparent clinical cure and for continuation of treatment for their tuberculous lesions; 40 patients are still under treatment. The clinical cure obtained by the treatment in 170 cases continues up to now. The body weight increased in 157 cases in the group of patients with clinical cure and remained stationary in 13 cases.

Brief Items

A clinic and hospital with two well equipped departments for work on prevention and therapy of syphilis and leprosy was recently opened to the public in Paraguay. This center will be a branch of the National Department of Hygiene. Dr. Ricardo Ugarriza is the director.

Dr. José B. Gómez of Buenos Aires left Argentina recently for Chicago. He will have a scholarship for one year given to him by the Argentine National Cultural Committee. He will study the pathology of primary tuberculous infection and BCG vaccination under Drs. Henry Sweany and Rosenthal of Chicago.

Prof. José Arce presented his resignation from the chair of clinical surgery in the Faculty of Medical Sciences of Buenos Aires. Dr. Oscar Ivanissevich was appointed to succeed him.

Dr. Franz Keysser of Buenos Aires, previously of Germany, died Jan. 29, 1941. He was a well known worker on the field of electrosurgery, on which he wrote several important articles.

Marriages

ADAMSON GORGAS BRENZER JR., Charlotte, N. C., to Miss Meredith Ewing Marshall of Providence, R. I., January 1.

IRVING DAVID LONDON, West New York, N. J., to Miss Sarah Miller of Lineville, Ala., in Brooklyn, January 1.

JOHN WATKINS TRENIS, Washington, D. C., to Miss Nelle Frances Elliott at Birmingham, Ala., in January.

GEORGE M. COOPER to Miss Alison Suzanne Hughson, both of Buffalo, at Cochran Field, Ga., February 28.

SAMUEL WATSON PAGE JR., Greenwood, S. C., to Miss Edric Ary Martin at Hillsboro, N. C., January 17.

WADLEY RAOUL GLENN to Miss Mary Frances Lewis, both of Atlanta, Ga., in Pensacola, Fla., recently.

GEORGE RITCHIE WALL, Siler City, N. C., to Miss Claudia Harris at Chevy Chase, Md., January 23.

JAMES NISSENBAUM, Appleton, Wis., to Miss Jean Hoffman of Ironwood, Mich., January 4.

GATES J. WAXELBAUM to Miss Sarah Frances Thames, both of Atlanta, Ga., recently.

MAX NORMAN to Miss Agnes Zuverink, both of Chicago, in Joliet, Ill., recently.

RALPH V. PLATON to Miss Joanne Pierson, both of Minneapolis, January 23.

Deaths

Joseph Bolivar De Lee ♂ emeritus among obstetricians in the United States, died at his home in Chicago, April 2, of coronary thrombosis, aged 72. Dr. De Lee was born in Cold Springs, N. Y., Oct. 28, 1869. After preliminary education at the College of the City of New York, he received the degree of doctor of medicine from the Chicago Medical College, now Northwestern University Medical School, in 1891. Following an internship in the Cook County Hospital during 1891 and 1892 he became demonstrator in anatomy at his alma mater for one year, then lecturer in physiology in the dental school. He then studied in the universities of Vienna, Berlin and Paris, returning to Chicago in 1894 and becoming demonstrator in obstetrics and then a lecturer on obstetrics, assuming the chair of obstetrics in 1896 and the title of professor of obstetrics in 1897.

Almost immediately Dr. De Lee undertook the organization and building of a lying-in dispensary, which he founded in 1895. He began his obstetric work in a small maternity center in a building in the slums in an area in which all maternity care had been largely done by midwives. The hospital for maternity care was first opened in 1899. It began promptly to grow and to develop. In 1917 the first Chicago Lying-In Hospital and Dispensary was opened by Dr. De Lee in Chicago and in 1931 it became affiliated with the University of Chicago, and a new institution was built on the campus of the university. This institution was formally merged with the University in 1938. When the Chicago Lying-In Hospital became associated with the University of Chicago he became professor of obstetrics and gynecology and chairman of the department of obstetrics and gynecology in the University of Chicago in 1929, holding that position for three years and serving thereafter as consultant to the hospital. In 1938 the board of trustees of the University of Chicago named the main building of the Chicago Lying-In Hospital group the Joseph B. De Lee Hospital. It is reported that more than 28,000 children have been born in the present institution and that it operated without a single maternal death in a period extending over eighteen months.

From the very beginning of his career Dr. De Lee devoted himself largely to the education and advancement of his specialty in the practice of medicine. In 1932 he founded the Chicago Maternity Center and until the time of his death served as consulting obstetrician. He was the author of a notable work, "The Principles and Practice of Obstetrics," first published in 1913 and now in its seventh edition. He was the author of "Obstetrics for Nurses," which is now in its twelfth edition and which was first published in 1904. He also published "Notes on Obstetrics" in 1904 and in the same year assumed editorship of the Year Book of Obstetrics. These books and monographs on obstetrics have been translated into most of the languages in the world and are used in medical schools in many nations.

Dr. De Lee was intimately associated with innumerable organizations in his specialty, including honorary fellowship in the Edinburgh Obstetrical Society. He was a fellow and vice president (1929) of the American Gynecological Society, a fellow of the American College of Surgeons. He was secretary of the Illinois State Medical Society in 1899, president of the Chicago Gynecological Society in 1908 and a councilor of the Chicago Medical Society in 1902. During 1933-1934 he was chairman of the Section on Obstetrics, Gynecology and Abdomi-

nal Surgery of the American Medical Association. In 1906 he was awarded the master of arts degree from Northwestern University.

On his 65th birthday Dr. De Lee was awarded the Jesse L. Rosenberger Medal, which was first won by C. L. Banting, co-discoverer of insulin.

Dr. De Lee recognized early the importance of the motion picture as a means of education. The new lying-in hospital was especially equipped for the making of motion pictures, particularly for educational purposes. Dr. De Lee was also the inventor of special devices used in obstetric and gynecologic practice. Practically all the proceeds derived from his practice and his publications Dr. De Lee devoted to the upbuilding of institutions with which he was associated and to the advancement of the teaching of obstetrics. In his career Dr. De Lee devoted himself not only to the institution which now bears his name but for many years was attending obstetrics in the Cook

County, Wesley, Mercy and Provident hospitals. Throughout his life he campaigned for improvement in obstetrics as a science and for techniques which would lower the death rates of mothers and babies. He lived to see many of the procedures for which he fought recognized as essential routine in his specialty.

Arthur Vincent Goss, North Pownal, Vt.; University of Vermont College of Medicine, Burlington, 1886; member of the American Psychiatric Association; first assistant physician at the Brattleboro Retreat, Brattleboro, Vt., from Oct. 15, 1923 to June 30, 1932; formerly on the staff of the Butler Hospital, Providence, R. I.; at one time assistant physician, assistant superintendent and superintendent of the Taunton (Mass.) State Hospital; aged 82; died, January 24, in Timbridge of cerebral hemorrhage and hypertension.

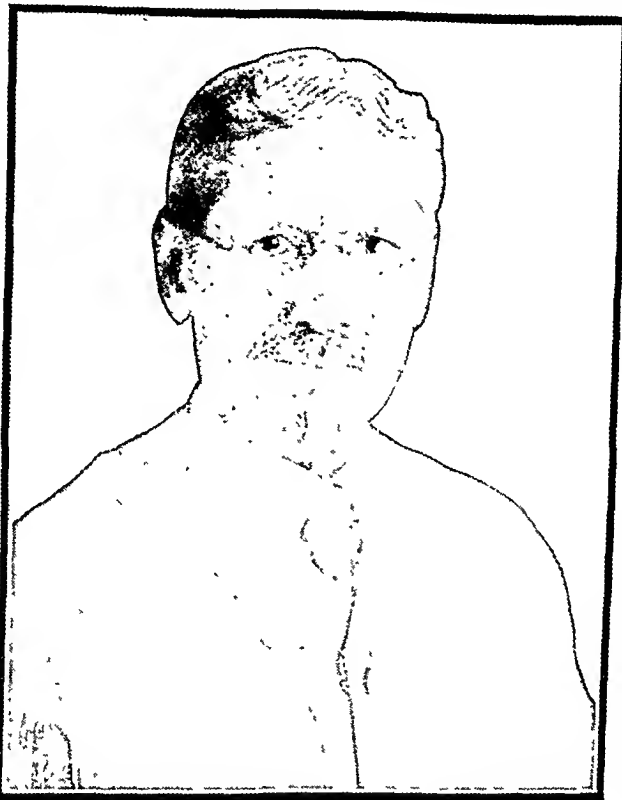
John Abraham Pratt ♂ Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the Ontario College of Surgeons; formerly assistant professor of otology, rhinology and laryngology at the University of Minnesota

Medical School; for many years on the staff of the Minneapolis General and Asbury hospitals; aged 73; died, February 21, of pneumonia and carcinoma of the prostate.

Edward Sutphen Pope ♂ New York; New York Homeopathic Medical College and Hospital, New York, 1903; Jefferson Medical College of Philadelphia, 1905; formerly adjunct professor of otology at the New York Polyclinic Medical School and Hospital; executive surgeon and secretary of the Midtown Hospital; on the staff of St. Vincent's Hospital, Montclair, N. J., and the New York Eye and Ear Infirmary; aged 61; died, January 23, of coronary disease.

Robert Hugh Arthur, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1885; Licentiate of the Kings Queens College of Physicians, Dublin, Ireland, 1885; served during World War 1; from 1914 to 1936 served on the Council of the Ontario College of Physicians and Surgeons and was president of that body in 1925 and 1926; past president of the Medical Council of Canada; at one time mayor of Sudbury; aged 80; died, Dec. 19, 1941.

Richard Joshua Brown ♂ Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1910; member of the South Orange village board of trustees; consultant on the staff of the East Orange (N. J.) General Hospital, Babies' Hospital, Newark and the Essex County Hospital for Contagious Diseases, Belleville; secretary and obstetrician on the staff of the Presbyterian Hospital, where he died, February 4, of lobar pneumonia, aged 58.



JOSEPH BOLIVAR DE LEE, M.D., 1869-1942

George Joshua Gillam, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1910; F.R.C.S. of England, 1923; served during World War I; a member of the staff in the department of anatomy as a demonstrator from 1923 to 1925 and a junior demonstrator in surgery from 1930 until 1933 at the University of Toronto Faculty of Medicine; aged 54; on the staff of the Toronto Western Hospital, where he died, Dec. 20, 1941.

Julius Wolff * New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; an Affiliate Fellow of the American Medical Association; ophthalmologist, Randall's Island Hospital, from 1899 to 1905; assistant ophthalmic surgeon to Bellevue Hospital from 1927 to 1932; served in various capacities on the staff of the Mount Sinai Hospital; aged 72; died, January 26, of acute coronary thrombosis.

Alexander Barclay Sr. * Coeur d'Alene, Idaho; University of Minnesota College of Medicine and Surgery, Minneapolis, 1907; past president of the Idaho State Medical Association; for many years member of the state medical examining board; fellow of the American College of Surgeons; medical director of the Coeur d'Alene Hospital; aged 59; died, February 27, at Arlington, Calif., of cirrhosis of the liver.

Charles Herman De Lancey * Passed Assistant Surgeon, Lieutenant, U. S. Navy, retired, Brooklyn; College of Physicians and Surgeons, medical department of Columbia College, New York, 1891; entered the navy June 23, 1900 and retired March 3, 1909 for incapacity resulting from an incident of service; aged 75; died, February 10, in the United States Naval Hospital of sarcoma of the left rib and lung.

Thomas Mitchell Burns * Denver; Gross Medical College, Denver, 1893; professor of obstetrics emeritus at the University of Colorado School of Medicine; fellow of the American College of Surgeons; attending obstetrician, Mercy Hospital; consulting obstetrician, Denver General Hospital, Florence Crittenton Home, and the National Jewish Hospital; aged 74; died, February 17, of posterior mediastinitis.

Samuel R. Holroyd, Athens, W. Va.; College of Physicians and Surgeons, Baltimore, 1890; member and past president of the West Virginia State Medical Association; county health officer; formerly member of the state legislature; at one time superintendent of the Spencer (W. Va.) State Hospital; aged 73; died in January in the Mercer Memorial Hospital, Princeton, of diabetes mellitus.

Thomas Van Hunter * Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1906; served with the Canadian Army during World War I; formerly on the staff of the Grace Hospital, Detroit, and the Highland Park (Mich.) Hospital; on the staff of the Presbyterian Hospital-Olmstead Memorial; aged 65; died, January 22, in an automobile accident.

Rollin Oliver Baker * Montour Falls, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1906; served during World War I; at various times health officer, school physician and county coroner; on the staff of the Shepard Relief Hospital; aged 59; died, February 11, in the Strong Memorial Hospital, Rochester, of carcinoma of the stomach.

Charles Green Rockwood Jennings, Elmira, N. Y.; University of Vermont College of Medicine, Burlington, 1884; College of Physicians and Surgeons, medical department of Columbia College, New York, 1885; formerly member of the board of education; aged 82; died, February 15, in the Arnot-Ogden Memorial Hospital of a fractured hip received in a fall.

William Austin Buchanan, Hammond, Ind.; University of Nashville (Tenn.) Medical Department, 1899; member of the Indiana State Medical Association; for many years secretary of the board of health of Hammond and formerly health officer; aged 71; on the staff of St. Margaret Hospital, where he died, February 11, of pyemia and diabetes mellitus.

Louis Francis O'Neill, Auburn, N. Y.; Albany Medical College, 1900; member of the Medical Society of the State of New York; past president of the Cayuga County Medical Society; formerly county coroner; on the staffs of the Mercy Hospital and the Auburn City Hospital; aged 66; died, January 5, of coronary occlusion and arteriosclerosis.

Irving Goumott Cameron * Brooklyn; Long Island College Hospital, Brooklyn, 1904; fellow of the American College of Surgeons; surgeon, Brooklyn Eye and Ear Hospital; consulting ear, nose and throat surgeon, Kings County Hospital; consultant in otorhinolaryngology, Wyckoff Heights Hospital; aged 66; died, February 1, of heart disease.

Charles Austin Durkee, Abercrombie, N. D.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the North Dakota State Medical Association; county health officer; aged 62; died, February 19, in a hospital at Fargo of acute coronary occlusion and diabetes mellitus.

Alphonse R. Bizot, Louisville, Ky.; University of Louisville Medical Department, 1901; member of the Kentucky State Medical Association; member of the county selective service examining board; on the staffs of the St. Mary and Elizabeth Hospital and St. Joseph Infirmary; aged 67; died, February 13, of carcinoma of the pancreas.

James Bebout Bert, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1912; associate professor of obstetrics at his alma mater; served during World War I; aged 52; on the staff of St. Luke's and Children's Hospital and the Hahnemann Hospital, where he died, February 4, of pneumonia.

Charles Lorton Best * Freeport, Ill.; Rush Medical College, Chicago, 1904; fellow of the American College of Surgeons; past president of the Stephenson County Medical Society; on the staffs of the Deaconess Hospital and St. Francis Hospital; aged 62; died, February 6, of coronary occlusion.

Eric Olonzo Giere * Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; fellow of the American College of Surgeons; member of the state medical board from 1903 to 1906; surgeon, Fairview Hospital, where he died, February 12, of coronary thrombosis, aged 73.

Joseph Herbert Clyman * Philadelphia; Medico-Chirurgical College of Philadelphia, 1910; chairman of the local draft board; on the staffs of St. Luke's and Children's Hospital, St. Joseph Hospital and the Mount Sinai Hospital; aged 55; died, February 18, of coronary thrombosis.

Albertus Nyland, Grand Rapids, Mich.; Physio-Medical College of Indiana, Indianapolis, 1886; member of the Michigan State Medical Society; past president of the state board of registration in medicine; aged 86; died, January 29, in St. Mary's Hospital of cerebral hemorrhage.

Amos McKinnie Jones * Anson, Texas; University of Texas School of Medicine, Galveston, 1906; served during World War I; aged 62; on the staff of St. Ann Hospital and of the Hendricks Memorial Hospital, Abilene, where he died, January 7, of coronary thrombosis.

John Joseph Breen, Lowell, Mass.; St. Louis University School of Medicine, 1928; member of the Massachusetts Medical Society; examining physician for the local draft board; aged 39; on the staff of St. John's Hospital, where he died, February 3, of a ruptured peptic ulcer.

Howard W. Arndt, Lore City, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association; aged 69; past president of the Guernsey County Medical Society; died, February 6, in St. Francis Hospital, Cambridge, of acute endocarditis.

Carl Freeman Pierce * Greensburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1907; past president of the Westmoreland County Medical Society; president of the staff of the Westmoreland Hospital; aged 60; died, January 22, of bronchogenic carcinoma.

Zannie Brantley * Grandin, Fla.; Atlanta (Ga.) School of Medicine, 1913; past president of the Putnam County Medical Society; for many years member of the board of county commissioners; aged 63; died, February 6, in a hospital at Palatka of pneumonia.

Stanley Frederick Goldman, New York; University and Bellevue Hospital Medical College, New York, 1936; member of the Medical Society of the State of New York; on the staff of the Bronx Hospital; aged 33; died, February 24, of cerebral hemorrhage.

James Randall Cooper, Richmond, Ind.; University of Nebraska College of Medicine, Omaha, 1932; member of the Indiana State Medical Association; superintendent of the Smith-Esteb Memorial Hospital; aged 38; died, February 7, of pneumonia.

Thomas Jefferson Stough, Montgomery, Ala.; University of Tennessee Medical Department, Nashville, 1893; member of the Medical Association of the State of Alabama; formerly member of the state legislature; aged 74; died, January 30, of nephritis.

Jefferson Brockner Van Tine, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; formerly on the staff of the Sloane Maternity Hospital; aged 70; died, January 22, of carcinoma of the liver.

James Byron Van Horn, Tucson, Ariz.; Eclectic Medical Institute, Cincinnati, 1905; member of the Arizona State Medical Association; formerly a first lieutenant in the medical reserve, U. S. Army; aged 59; died, January 28, of cerebral thrombosis.

Clinton Amos Hardesty Ⓢ Paragould, Ark.; St. Louis College of Physicians and Surgeons, 1910; past president of the Greene County Medical Society; on the staff of the Dickson Memorial Hospital; aged 65; died, January 10, of coronary occlusion.

Ralph Livingston Daniels, New Bern, N. C.; Medical College of Virginia, Richmond, 1912; member of the American Academy of Ophthalmology and Otolaryngology; served during World War I; aged 54; died, February 21, of cerebral hemorrhage.

Harry Cattell Fisler Ⓢ Easton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; on the staff of the Easton Hospital; aged 68; died, February 20, in the Jefferson Hospital, Philadelphia, of acute coronary thrombosis.

Justus Corbly Garard Ⓢ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 68; on the staff of St. Anne's Hospital, where he died, February 4, of carcinoma of the sigmoid.

Ellsworth E. Conover Ⓢ High Bridge, N. J.; University of Vermont College of Medicine, Burlington, 1885; on the staff of the Hackensack (N. J.) Hospital; aged 80; died, February 14, of shock and exhaustion following a prostatectomy.

Nathaniel Guido Clark Ⓢ Montgomery, Ala.; Birmingham Medical College, 1898; chief medical advisory officer of the department of correction and institutions of the state of Alabama; aged 69; died, February 11, of coronary occlusion.

George Richtmyer DeSilva, Catskill, N. Y.; University of the City of New York Medical Department, 1881; member of the Medical Society of the State of New York; aged 86; died, February 18, of acute dilatation of the heart.

Lemuel Baxley Russell, Hoopeston, Ill.; Rush Medical College, Chicago, 1894; past president of the Vermilion County Medical Society; member of the draft board during World War I; aged 73; died, January 22, of myocarditis.

Robert W. Cupp, Marmaduke, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1919; member of the Arkansas Medical Society; past president of the school board; aged 58; died, January 17, of carcinoma of the liver.

Gustavus G. Bock, Smithton, Ill.; St. Louis Medical College, 1882; member of the Illinois State Medical Society; for many years mayor of Smithton; aged 83; died, February 6, in Maryland Heights, Mo., of arteriosclerosis.

Oscar T. Bloomer, St. Joseph, Mo.; Central Medical College of St. Joseph, Mo., 1895; member of the Missouri State Medical Association; aged 80; died, February 19, of arteriosclerosis and cerebral hemorrhage.

Irwin Isadore Abrams, Toledo, Ohio; Detroit College of Medicine and Surgery, 1934; resident physician at the Veterans Administration Facility, Sunnyside, N. Y.; aged 33; died, February 5, in Lake Placid, N. Y.

Frederick George Ulman, Enumclaw, Wash.; University of Oregon Medical School, Portland, 1905; member of the Washington State Medical Association; aged 71; died, January 29, of coronary occlusion.

Byron E. Burnell Ⓢ Flint, Mich.; Detroit College of Medicine, 1901; past president of the Genesee County Medical Society; aged 75; died, February 16, in the Hurley Hospital of coronal vascular disease.

Charles Ross Bonzo, Ambridge, Pa.; Ohio Medical University, Columbus, 1903; member of the board of health of Ambridge; aged 61; died, February 8, of coronary thrombosis and diabetes mellitus.

Arthur O. Flowers, Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1891; member of the West Virginia State Medical Association; aged 78; died, February 5, of acute peritonitis.

George Thomas Swail, Houston, Texas; M.B., University of Glasgow Medical Faculty, Scotland, in 1878 and M.D. in 1885; aged 93; died, January 11, in St. Joseph's Hospital of coronary occlusion.

Ira B. Oldham Ⓢ Muskogee, Okla.; Hospital College of Medicine, Louisville, Ky., 1892; aged 70; on the staff of the Oklahoma Baptist Hospital, where he died, January 14, of coronary occlusion.

John B. Argadine, Toledo, Ohio; Cincinnati College of Medicine and Surgery, 1893; aged 74; died, February 22, in St. Vincent's Hospital of uremia and a fracture of a femur received in a fall.

Nellie Veronica Donovan, New York; Cleveland Homeopathic Medical College, 1910; aged 54; died, February 8, in the Kings Park (N. Y.) State Hospital of arteriosclerotic heart disease.

Alice Idella Ross, Whittier, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1894; aged 71; died, January 15, of carcinoma of the mammary gland.

Francis Adelbert Bragg, Foxboro, Mass.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medical Society; aged 76; died, February 6, of cerebral hemorrhage.

Ernest H. Harris, Coy, Ark.; College of Physicians and Surgeons, Little Rock, 1911; member of the Arkansas Medical Society; aged 61; died, January 15, of coronary occlusion.

Charles M. Iddings, Brookeville, Md.; University of Maryland School of Medicine, Baltimore, 1888; aged 81; died in February of cerebral hemorrhage and arteriosclerosis.

Mary E. Troyer Williamson, Ramona, Okla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1883; aged 88; died, January 15, of injuries received in a fall.

John H. Ellington, San Augustine, Texas (licensed in Texas under the Act of 1907); member of the State Medical Association of Texas; aged 63; died, February 2.

Harvey Llewellyn Clarke Sr., Fairbury, Neb.; University of Michigan Homeopathic Medical School, Ann Arbor, 1882; aged 83; died, February 3, of coronary thrombosis.

Rembert Ernest Broadway, Summerton, S. C.; Medical College of the State of South Carolina, Charleston, 1911; aged 57; died, February 18, of coronary thrombosis.

General Grant Bragg, Huntsville, Mo.; Missouri Medical College, St. Louis, 1889; served during World War I; aged 75; died, February 9, of uremia and chronic nephritis.

William F. Williamson, Richmond, Va.; University College of Medicine, Richmond, 1905; served during World War I; aged 62; died, January 13, of heart disease.

Walter Brown, Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1875; aged 91; died, February 13, in the Fort Hamilton Hospital of cerebral hemorrhage.

John Floyd A. Ketcham, Great Barrington, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1935; aged 39; died, January 30, of heart disease.

John S. Patterson, Staunton, Ill.; St. Louis College of Physicians and Surgeons, 1904; aged 75; died, January 13, in a hospital at Alton of arteriosclerosis.

William P. Collins, Racine, Wis.; Rush Medical College, Chicago, 1888; aged 82; died, February 7, in Lakeland, Fla., of bronchopneumonia and heart disease.

Martin David Goldenberg, Milwaukee; Marquette University School of Medicine, Milwaukee, 1929; aged 44; died, February 19, of coronary occlusion.

John T. Blanks, Dermott, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1888; aged 80; died, February 18, of endocarditis.

Conrad Fisher Sayre, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1910; county coroner; aged 52; died, January 11.

Owen John Cameron, Antigonish, N. S., Canada; Harvard Medical School, Boston, 1918; aged 46; died, January 9.

DIED IN MILITARY SERVICE

Gustavus De Lana Funk Ⓢ El Reno, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1933; was called to active duty as a first lieutenant in the medical reserve, U. S. Army, Oct. 11, 1940, and was promoted to captain in December 1941; was assigned to the district recruiting office at Lubbock, Texas; aged 36; died, February 26, of heart disease.

Correspondence

PERIPHERAL VASCULAR DISEASE CLINICS

To the Editor:—The committee appointed by the American Heart Association to establish standards for peripheral vascular disease clinics desires to have a complete list of such clinics throughout the United States. Kindly communicate as soon as possible after seeing this notice with the chairman of this committee, giving the following data:

1. Name of hospital?
2. Name of chief or chiefs of clinic?
3. Under medical or surgical service?
4. Is there an associated hospital service?

A. WILBUR DURYEE, M.D., Chairman.
140 East Fifty-Fourth Street,
New York City.

PROPYLENE GLYCOL A MENSTRUUM FOR SODIUM SULFATHIAZOLE

To the Editor:—In Queries and Notes in a recent issue of THE JOURNAL (February 14, p. 567) one reads the reply to the disturbing question concerning the safe concentration of sodium sulfathiazole when used in medicating the nasal mucosa. As was so well stated, sodium sulfathiazole is not free of undesirable reactions because of the irritating properties associated with its alkalinity. Aqueous solutions of sodium sulfathiazole vary in pH from 10 to 11 and may become yellow on standing, especially when unprotected from daylight. To obviate the strong alkalinity, irritating properties and deterioration of such solutions, we have dissolved various sulfonamides in propylene glycol (*Modern Hospital* 57:106 [July] 1941; *J. Indiana M. A.*, to be published in April). The most useful of these propylene glycol preparations have been a 3 per cent solution of sulfathiazole, a 3 per cent solution of sulfapyridine and a 10 per cent solution of sulfanilamide. The pH of the sulfathiazole solution varies between 6 and 7 when diluted 1:9 with water, and the solution of sulfanilamide possesses a pH of 5.3 when diluted 1:7 with water, thus affording solutions whose pH more nearly conforms to normal nasal secretions. These secretions were found (Fabricant, N. D.: Significance of the pH of Nasal Secretions, *Tr. Am. Acad. Ophthalm.*, May-June, 1941, p. 197) to be acid in reaction, pH values varying from 5.5 to 6.5, and to become alkaline when infected. The 3 per cent solution of sulfathiazole can be diluted with 0.9 per cent saline solution or water prior to use, but the undiluted 3 per cent solution atomizes very well at 22 C. or more, is nonirritating to the mucosa of the nasal passages, oral pharynx, larynx, trachea or bronchi and affords definite relief in many cases of acute and chronic infections of the upper respiratory tract. Any type of organism susceptible to sulfonamide therapy should, if harbored in the upper respiratory tract, likewise be favorably affected by sulfonamides in propylene glycol. Detailed reports of various types of cases studied with Drs. G. B. Myers, R. H. Huff, J. M. Robb and R. W. Blackford at the Detroit Receiving Hospital will be published later, but results to date indicate that this preparation of sulfathiazole warrants extensive trial in infections of the upper respiratory tract. The patient is instructed to inhale while the solution is sprayed several times into the nose or throat at thirty or sixty minute intervals for four or five hours or more, and this procedure may be supported in cases of severe infections by proper oral doses of sulfathiazole.

If stored in amber colored bottles at 22 C. or more these self-sterilizing, nonirritating solutions of concentrated sulfathiazole remain stable, colorless and potent. Some of our solutions are now more than 6 months old and no apparent alteration in their consistency, appearance or potency is evident. Our

toxicity experiments on rabbits receiving these solutions intraperitoneally and intravenously and the investigations of the Stanford group (Hanzlik, D. J.; Neuman, H. W.; Van Winkle, W.; Lehman, A. J., and Kennedy, N. K.: Toxicity, Fate and Excretion of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* 67:101 [Sept.] 1939) reveal that, in contradistinction to diethylene glycol (Geiling, E. K.; Coon, J. M., and Schoeffel, E. W.: Preliminary Report of Toxicity Studies [of Diethylene Glycol] on Rats, Rabbits and Dogs, *THE JOURNAL*, Nov. 6, 1937, p. 1532; Haag, H. B., and Ambrose, A. M.: Studies on the Physiologic Effect of Diethylene Glycol, *J. Pharmacol. & Exper. Therap.* 59:93 [Jan.] 1937), propylene glycol can be well tolerated in large amounts without unfavorable results. The relative safety of propylene glycol is also assured by its use as a vehicle for certain proprietary vitamin D preparations and in sobisminol mass, and experience to date warrants its application in any concentration to any open lesion of the skin or mucosa, with the probable exception of the conjunctiva. This glycol, as well as ethylene glycol and trimethylene glycol, is an effective aerial germicide (Robertson, O. H.; Bigg, Edward; Miller, B. F., and Baker, Zelma: Sterilization of Air by Certain Glycols Employed as Aerosols, *Science* 93:213 [Feb. 28] 1941). Propylene glycol may be fortified, however, by addition of 10 per cent sulfanilamide, 3 per cent sulfathiazole or sulfapyridine. Unfortunately, sulfadiazine is only approximately 0.3 per cent soluble in propylene glycol. We also find that equal volumes of the three propylene glycol solutions of sulfanilamide, sulfathiazole and sulfapyridine may be mixed, since they are compatible and thus afford greater probability of efficiency in the presence of mixed infections.

FREDRICK F. YONKMAN, M.D.
BRADFORD N. CRAVER, PH.D.
ARNOLD J. LEHMAN, M.D.
HAROLD F. CHASE, M.D.

Detroit.

ESTROGENIC TREATMENT OF GONORRHEAL VULVOVAGINITIS

To the Editor:—A few years ago I corresponded with reference to the relative worth of the estrogenic treatment of gonorrheal vulvovaginitis. In view of the fact that the originator of the estrogenic treatment, Dr. R. M. Lewis, has himself repudiated this treatment and in view of current literature corroborating his present attitude, I feel that it is worth while to bring this matter to your attention again. I quote from an article by him in *Venerical Disease Information* (22:352 [Oct.] 1941): "Unfortunately, treatment with estrogens is still employed. As I shall mention later, it has no curative value and is not to be compared with the brilliant results now obtainable with sulfathiazole. . . . It is evident that the estrogenic treatment was but a palliative procedure which carried patients along until spontaneous recovery occurred."

However, there are many interesting and valuable facts that have been brought out by this treatment. One is the fact that newborn females do not easily acquire gonorrheal vulvovaginitis, the probable reason being that they carry, for a short time, estrogens from their mothers (cause of hyperplasia of breasts and genitalia of newborn females). These estrogens apparently do not allow the gonococcus to gain a foothold in the newborn female genitalia. Nevertheless, in 1934 I reported 3 cases which occurred in premature females and recommended "that all newborn females have prophylaxis of the vulva routinely, along with the eyes." Since then this has become the routine practice in one of the largest hospitals of this city. Lewis now recommends "flushing the vagina and vulva of the newborn of infected mothers with silver solutions."

BERNARD NOTES, M.D., Washington, D. C.

Medical Examinations and Licensure**COMING EXAMINATIONS AND MEETINGS**

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO Feb 15-16, 1943 Sec. Council on Medical Education and Hospitals, Dr H G Weiskotten, 535 North Dearborn Street, Chicago

**NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, April 4, page 1241

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16-18 Acting Sec, Dr B T Austin, 519 Dexter Ave, Montgomery

ARIZONA * Medical Little Rock, June 4-5 Sec, Dr D L Owens, Harrison Electric Little Rock, June 4-5 Sec, Dr Clarence H Young, 1415 Main St, Little Rock

CALIFORNIA Written San Francisco, June 29-July 2 Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, May 20 Sec, Dr Charles B Pinkham, 1020 N St, Sacramento

DELAWARE Dover, July 14-16 Sec, Medical Council of Delaware, Dr Joseph S McDaniel, 229 S State St, Dover

FLORIDA * Jacksonville, June 22-23 Sec, Dr William M Rowlett, Box 786, Tampa

GEORGIA Atlanta June Sec, State Examining Boards, Mr R C Coleman, 111 State Capitol, Atlanta

HAWAII Honolulu, July 13-16 Sec, Dr James A Morgan, 55 Young Bldg, Honolulu

ILLINOIS Chicago, June 23-25 Superintendent of Registration, June 16-18 Sec, Bowers, 301 State St

IOWA * Iowa City, May 11-13 Dir, Division of Licensure and Registration, Mr H W Grefe, Capitol Bldg, Des Moines

KANSAS Kansas City, June 2-3 Sec, Board of Medical Registration and Examination, Dr J F Hassig, 905 N Seventh St, Kansas City

KENTUCKY Louisville, May 27-29 Sec, State Board of Health, Dr A T McCormack, 620 S Third St, Louisville

MARYLAND Medical Baltimore, June 9-12 Sec, Dr John T O'Mara, 1215 Cathedral St, Baltimore Homeopathic Baltimore, June 16-17 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MICHIGAN * Ann Arbor and Detroit, June 10-12 Sec, Board of Registration, J Earl McIntyre, 202-4 Hollister Bldg, Lansing April 21-23 Sec, Dr Julian F Du Bois, Bldg, St Paul

MINNESOTA June Assistant Sec, State Board of Health, on

MISSOURI St Louis June 4-6 Sec, Board of Health, Dr James Stewart, State Capitol Bldg, Jefferson City

NEVADA Written May 4 Reciprocity with oral examination May 4 Applications must be on file not later than April 20 Sec, Dr Frederick M Anderson, 215 N Carson St, Carson City

NEW JERSEY Trenton, June 16-17 Sec, Dr Earl S Hallinger, 28 W State St, Trenton

NEW MEXICO * Santa Fe, April 13-14 Sec, Dr Le Grand Ward 135 Sena Plaza, Santa Fe

NEW YORK Albany Buffalo New York and Syracuse, June 22-25 Chief Bureau of Professional Examinations, Mr Herbert J Hamilton, 315 Education Bldg Albany

NORTH CAROLINA Raleigh June 15 Sec, Dr W D James Hamlet

NORTH DAKOTA Grand Forks, July 7-10 Sec, Dr G M Williamson, 43 S Third St, Grand Forks

OHIO Written Columbus, June Sec, Dr H M Platter, 21 W Broad St, Columbus

OKLAHOMA * Oklahoma City June 3-4 Sec, Dr James D Osborn Jr, Frederick

OREGON * Portland July 22-24, Exec Sec, Miss Lorraine M Coulee 608 Fuling Bldg, Portland

PENNSYLVANIA Philadelphia and Pittsburgh July Act Sec, Bureau of Professional Licensing, Mrs Marguerite G Steiner, 358 Education Bldg, Harrisburg

SOUTH CAROLINA Columbia June 22-24 Sec, Dr A Earle Boozer, 505 Saluda Ave, Columbia

SOUTH DAKOTA * Pierre, July 21-22 Dir, Medical Licensure, Dr J I D Cook, State Board of Health Pierre

UTAH Salt Lake City June 29-30 Assistant Dir, Department of Registration, Mr G V Billings, 324 State Capitol Bldg, Salt Lake City

VERMONT Burlington, June 16-18 Sec, Board of Medical Registration, Dr J J Lawless, Richford

VIRGINIA Richmond, June 17-20 Sec, Dr J W Preston, 30½ Franklin Rd, Roanoke

WISCONSIN June 30-July 3 Sec, Dr H W Shutter, Milwaukee June 1-2 Sec, Dr M C Keith, Capitol Bldg, Chevenne

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT June 13 Address State Board of Healing Arts, 1945 Yale Station, New Haven

DISTRICT OF COLUMBIA Washington, April 20-21 Sec, Commission on Licensure, Dr George C Ruhland, 6150 E Municipal Bldg, Washington

FLORIDA Gainesville June 8 Sec, Professor J F Conn, John B Stetson University, De Land

IOWA Des Moines, April 14 Dir, Division of Licensure and Registration, Mr H W Grefe, Capitol Bldg, Des Moines

NEBRASKA Omaha May 5-6 Dir, Bureau of Examining Boards, Mrs Jeannette Crawford, 1009 State Capitol Bldg, Lincoln

NEW MEXICO Springfield, June 12 Sec, Miss Pia Joergers, State Capitol, Santa Fe

OKLAHOMA Oklahoma City, May 15 Sec, Dr Oscar C Newman, Shattuck

OREGON Corvallis July 11 Sec, Eugene examiners, then June 24 Sec, Mr Charles E

RHODE ISLAND Providence, Mr Thomas B Casey, 166 State

SOUTH DAKOTA Vermillion, Jun

Bureau of Legal Medicine and Legislation**MEDICOLEGAL ABSTRACTS**

Malpractice: Liability for Results of Treatment of Infantile Paralysis.—In November 1934 the plaintiff wife lost the use of the upper part of her body, her arms and her hands as the result of an attack of infantile paralysis and was immediately placed under the supervision and direction of an orthopedic surgeon. While under his care she improved to a point at which she could rotate her arms and could perform simple tasks with her hands, such as cutting out pictures, untying knots in shoelaces, cleaning out grapefruit and peeling potatoes. There was very little improvement in the patient's ability to use the muscles of her upper arms and shoulders. Some time in July 1936 the patient became dissatisfied with her treatment and progress and consulted the defendant physician, an orthopedic surgeon with many years' experience in the treatment of patients afflicted with infantile paralysis. He agreed to treat her on the condition that she follow his instructions. On July 7, 1936 the defendant placed the patient in a cast which covered her body from her neck to her hips and extended down her arms to the first joint of the fingers and thumbs. The cast remained in place until November 11, when it was removed on the patient's complaint that it was becoming painful. When the cast was removed, the patient's wrists and fingers were found to be practically rigid, and many massage treatments and even manipulations under an anesthetic were necessary before any flexibility returned. There seemed to be a slight improvement in the shoulder muscles, however. In a subsequent suit by the patient and her husband against the defendant for damages, the trial court entered judgment for the plaintiffs, and the defendant appealed to the Supreme Court of Washington.

The only expert medical testimony in the case was supplied by the defendant and Dr LeCocq, a witness called in his behalf. Dr LeCocq stated that it was the approved and accepted practice of orthopedic physicians in that community to place an infantile paralysis patient in a cast in order to rest the affected muscles and that very often the physician would not visit the patient from the time the cast was put on until it was removed, the patient being advised to report if anything seemed wrong. Both Dr LeCocq and the defendant stated that some stiffness in the immobilized joints was to be expected, that such stiffness would occur within three to eight weeks after the cast was put on, and that it would not be aggravated or increased by permitting the cast to remain in place longer than eight weeks, because once the stiffness had set in it became fixed and would not change. The defendant further testified that when the cast was applied he told the patient to notify him any time anything seemed wrong. After about eight weeks he called the patient's husband and told him to buy a brace to be applied as soon as the cast was removed. Because of some financial trouble with the brace maker, however, the husband did not obtain the brace until November 10 or 11. The cast was then removed and the brace applied. There was also some evidence on behalf of the defendant that the patient did not follow all of the recommended treatment. The plaintiffs did not offer any expert testimony indicating that the patient's condition was in any way the result of the defendant's treatment.

The plaintiffs contended that the defendant's negligence consisted in leaving the patient in the cast for more than the customary six to eight weeks without making periodic investigations to ascertain her condition. They also contended that no expert testimony was needed to prove the defendant's unskilled and negligent treatment. The Supreme Court admitted that in malpractice cases it is not always necessary to prove negligence by direct and positive evidence but said that the only exceptions were cases in which the negligent act was readily apparent as the leaving of a sponge in a person's body after an operation. The most the plaintiffs' evidence showed, said the court, was that, when the cast was put on, the patient could use her wrists and fingers and when it was taken off she could not, in other words, that a bad result followed the attempt of the defendant to restore the use of the patient's shoulder muscles. A physician

is not a guarantor, and the mere fact that a bad result follows a particular treatment does not in itself establish negligence. Furthermore, the court was of the opinion that if the patient's husband had furnished the requested brace sooner the cast would have been removed sooner.

On the basis of all the evidence, the court thought, there was no competent showing that the patient's injuries in any way resulted from the fact that the cast was left on longer than the ordinary six to eight weeks or that if the defendant had made an investigation at the end of six or eight weeks he would have found a different condition from that which existed at the time the cast was ultimately removed. The court also held that the question of the defendant's negligence in this case could properly be determined only by medical experts and that, since the plaintiffs furnished none, to allow the judgment to stand would be to say that the jury could speculate on the question of the defendant's negligence. The judgment for the plaintiffs was accordingly reversed.—*Crouch v. Wyckoff*, 107 P. (2d) 339 (Wash., 1940).

Assault and Battery: Sufficiency of Evidence to Show Consent to Operation.—The plaintiff sustained injuries to his right chest and neck, above and below the clavicle, and was eventually taken to a hospital and placed under the care of the defendant physician. A roentgenogram disclosed a fracture of the transverse process of the sixth cervical vertebra on the right side. Electrical treatments were administered for a considerable period but without success; the plaintiff continued to suffer excessive pain in his shoulder whenever he moved his arm. The defendant therefore decided that an operation was necessary. Neither the exact nature of the operation nor its result was disclosed in the report of this case, but some time thereafter the plaintiff sued the defendant physician for damages. The jury disagreed, the defendant's motion for judgment was denied, and the defendant appealed to the Supreme Court of Pennsylvania.

The plaintiff contended that the defendant had performed the operation without his consent and was therefore guilty of an assault and battery. The evidence showed that after electrical treatment gave no relief the defendant advised the plaintiff that an operation would be necessary. Various conversations were held between the plaintiff and the defendant concerning this operation, and at no time did the plaintiff interpose any objection to it. In fact the plaintiff testified "Dr. Berg come to my room and tell me, he say, 'Mr. Dicenzo, we going to operate you half past eight tomorrow morning.' I say, 'O. K., doctor. Where are you going to operate me?'" Apparently the plaintiff's only worry was as to the location of the incision. He was aware, however, that surgical relief was necessary and that the region of the neck would be involved. The evidence showed that the incision was, in fact, "made over the neck." The Supreme Court observed that when a patient is in full possession of his faculties and able to consult about his condition and when no emergency exists making a conference with the physician impracticable, the patient's consent is a prerequisite to a surgical operation by his physician. An operation without the consent of the patient under such circumstances constitutes a technical assault. Applying that rule to the facts of this case, however, the Supreme Court was of the opinion that the defendant was fully justified in believing that the plaintiff had assented to the performance of the operation. The order overruling the defendant's motion for judgment was therefore reversed and judgment was entered for the defendant.—*Dicenzo v. Berg*, 16 A. (2d) 15 (Pa., 1940).

Malpractice: Pregnancy Diagnosed as Tumor; Right of Specialist to Rely on Diagnosis by Family Physician.

—The plaintiff, believing that she was pregnant, consulted her family physician, who examined her both externally and internally and diagnosed her condition as a tumor rather than a pregnancy. He then took the plaintiff to a roentgenologist for treatment. The only examination which the roentgenologist made was to feel the plaintiff's abdomen and call attention to its enlargement. Relying thus on the diagnosis of the family physician, he administered a roentgen treatment. The decision abstracted does not indicate what injury the patient suffered, but she sued the two physicians and the case in the trial court

was nonsuited as to the roentgenologist and dismissed for lack of jurisdiction as to the family physician because he resided in another county. The plaintiff appealed to the court of appeals of Georgia, division No. 1.

The plaintiff contended that the malpractice of the defendants consisted in their failure and refusal to make a roentgen examination to determine whether or not she was in fact pregnant. The court of appeals said that a patient was entitled to receive as thorough and careful an examination as the circumstances would permit. The evidence failed to show, however, said the court, that the family physician had an x-ray apparatus available at the time he made the diagnosis, that the method of examination used by him was not the customary one under the circumstances or that the child was fully enough developed to have been discovered by a roentgen examination. The plaintiff then insisted that the roentgenologist, who did have x-ray equipment available, should have made such an examination. The court of appeals held, however, that a specialist to whom a family physician refers a patient for treatment has a right to rely on the diagnosis made by the family physician unless there are contrary indications. The slight examination made by the roentgenologist in this case, continued the court, was sufficient to lead him to believe that the diagnosis of the family physician had been correct. He was therefore not required to examine further. In conclusion, the court also pointed out, this was a case which concerned highly specialized expert knowledge with which laymen were unfamiliar and that, "where want of skill and care is not thus shown by expert evidence applied to the facts, there is no evidence of it proper to be submitted to the jury. . . . Laymen, even jurors and courts, are not permitted to say what is the proper method of diagnosing a case for discovering the nature of an ailment." A court and jury must have a standard measure, which they can use in measuring the acts of a physician to determine whether or not he exercised a reasonable degree of care and skill. That standard has to be furnished by testimony of physicians, for it is a medical question. The plaintiff's evidence was entirely silent as to the standard method of diagnosing and treating a case of this nature. Therefore the action of the trial court nonsuiting one defendant and dismissing the other was proper and the judgment for the defendants was affirmed.—*Pilgrim v. Landham et al.*, 11 S. E. (2d) 420 (Ga., 1940).

Birth Control: Materiality of Intent of Vendor of Contraceptives.—A Massachusetts law provides that "whoever sells, lends, gives away, exhibits, or offers to sell, lend or give away an instrument or other article intended to be used for self-abuse, or any drug, medicine, instrument or article whatever for the prevention of conception or for causing unlawful abortion . . ." is guilty of a felony. The defendant, a registered pharmacist, sold some condoms to a police officer who purchased them for the purpose of holding them as evidence. It was admitted by both the defendant and the commonwealth, in a subsequent prosecution of the defendant for violating the foregoing law, that the condom is medically recognized and regarded as a venereal disease preventive and that it is sometimes used to prevent conception as well. The commonwealth produced no evidence indicating that the defendant intended the object of the sale to be used for any unlawful purpose. On this evidence, the defendant was found guilty of the charge against him and appealed to the Supreme Judicial Court of Massachusetts.

The commonwealth contended that since the articles sold by the defendant were susceptible of use for an unlawful purpose, and often were used for that purpose, the mere fact that they were equally susceptible of a lawful use should be disregarded and the sale should be condemned as the sale of articles "for" the prevention of conception. The defendant, on the other hand, contended that the word "for," as used in the law, referred to the intent of the vendor. He argued that the sale of articles susceptible of both a lawful and an unlawful use could not be declared unlawful without actual proof that the vendor knew, at the time he made the sale, that they were going to be used for the unlawful purpose. He also suggested that the commonwealth's construction would include within the prohibition of the statute the sale of many familiar, and almost necessary antiseptic, hygienic and sterilizing articles, since such articles were

likewise susceptible of being used to prevent conception. The Supreme Judicial Court admitted that the difficulty in this case resulted from the fact that the articles sold by the defendant were not used exclusively either for the prevention of conception or for the prevention of disease. The declared public policy of Massachusetts, the court said, is offended by the sale of articles intended to prevent conception; it is also offended by the unchecked spreading of venereal disease, even among those who indulge in illicit sexual intercourse. The insertion of the words "drug" and "medicine" in the law, said the court, made necessary some change in grammatical construction, and precluded, after the words "for self-abuse," the simple adding of the words "or for the prevention of conception or for causing unlawful abortion," and thus making the phrase "intended to be used" patently applicable to all three purposes. To the court there was reason to believe that the words "intended to be used" were in effect to be understood before the word "for" in the two instances in which they are omitted in the law. They may have been omitted, continued the court, either because to repeat them would have made the wording cumbrous or because the word "for" by itself conveys the same idea of intent or purpose.

The court thought that an indication of legislative intent was shown by the fact that in the law the prohibition of the sale, etc., of an "instrument or article . . . for the prevention of conception" is followed immediately by the words "or for causing unlawful abortion." The same instrument or article that would cause a lawful abortion would doubtless cause an unlawful one, the court pointed out, and if a dealer in surgical instruments should be accused of selling to a surgeon an instrument "for" causing unlawful abortion, an inquiry would necessarily be opened as to the purpose for which the particular instrument was sold and intended to be used. It would be strange to hold, the court concluded, that intent and purpose are material in construing the word "for" in the phrase "for causing unlawful abortion," and immaterial in construing the same word in the phrase "for the prevention of conception." The Supreme Judicial Court therefore agreed with the construction contended for by the defendant and reversed the judgment of conviction.—*Commonwealth v. Corbett*, 29 N. E. (2d) 151 (Mass., 1940).

Osteopathy: Right of Osteopath to Prescribe Narcotics.—The narcotic act of Pennsylvania provides that its proscriptions shall not apply to "licensed physicians" in the regular course of their practice. The act does not define the term "licensed physicians." The defendant, a licensed osteopath, was indicted for prescribing morphine sulfate in violation of that act. The trial court entered an order sustaining the defendant's demurrer and quashing the indictment, and the commonwealth appealed to the superior court of Pennsylvania.

The defendant contended that a person duly licensed to practice osteopathy was a "licensed physician" within the meaning of the narcotic act. The accepted definition of a "physician," said the superior court, is "a person skilled in physic or the art of healing; one duly authorized to treat diseases, especially by medicines." The court admitted that the word "physician" is most frequently used to refer to a doctor of medicine but said that it also includes the adherents of other schools authorized to treat diseases. Under the Pennsylvania osteopathic act, the court pointed out, osteopathy is recognized as "a complete and independent scientific system." In no less than seven instances in the body of that act, said the court, persons licensed to practice osteopathy are referred to as "osteopathic physicians." Such classification in the very act determining an osteopath's qualifications is, held the court, conclusive evidence that "licensed osteopaths" are "licensed physicians" and therefore within the exception to the prohibitions of the narcotic act. In conclusion, the court advised that if the defendant had exceeded his authority as an osteopath when he prescribed narcotics, "as the information tends to indicate," he should have been charged with practicing medicine without a license rather than with violating the narcotic act.

In a dissenting opinion, two judges pointed out that, under the Pennsylvania statutes, an "osteopath" is defined as an individual licensed "to practice osteopathy," an "osteopathic surgeon" as one licensed "to practice osteopathy and osteopathic surgery," and a "physician" as one licensed "to engage in the practice of

medicine and surgery in any or in all of its branches." These definitions clearly indicated to the dissenting judges that the terms "osteopath," "osteopathic surgeon" and "physician" have three different and distinct meanings. The osteopathic act specifically provides that osteopathy "opposes the introduction of drugs into the body organism as curative agencies" and that the practice of osteopathy is not to be construed as the practice of medicine. Since osteopaths do not practice medicine and do not administer drugs or medicine in the regular course of their practice, continued the dissenting opinion, no specific exception in favor of osteopathy was thought necessary or advisable by the legislature when it enacted the narcotic act. Commenting on the reasoning of the majority based on the fact that the osteopathic act refers to its licentiates as osteopathic physicians, the dissenting judges also pointed out that the veterinary act refers to its licentiates as veterinary physicians. Using the same analogy as that found in the majority opinion, said the dissenting judges, it would be necessary to conclude that the word "physician" in the narcotic act included veterinarian and, in the opinion of these judges, "that was not intended, and is not the fact."

Pursuant to the majority opinion, the judgment in favor of the defendant was accordingly affirmed. Subsequently the Supreme Court refused to entertain an appeal by the commonwealth.—*Commonwealth v. Cohen*, 15 A. (2d) 730 (Pa., 1940).

Malpractice: Blindness Attributed to Refrigerant; Treatment Allegedly Negligent.—As the plaintiff was attempting to repair an electric refrigerator, an explosion occurred and the refrigerant, sulfur dioxide, came in contact with his eyes. The defendant physician was immediately called and arrived at the plaintiff's home in about fifteen minutes. In the meantime the plaintiff applied a wet compress to his eyes. When the defendant appeared the plaintiff explained how the accident had happened and said he thought the refrigerant was ammonia. The defendant examined the refrigerator however and told the plaintiff that he didn't think it contained ammonia but that he wasn't sure what kind of gas it was. He then made as thorough an examination of the plaintiff's eyes as was possible under the circumstances but did not render any treatment. The plaintiff was advised to stay outside in the fresh air and sunlight for a "couple of hours." At no time during the defendant's visit did the plaintiff complain of any pain. Shortly thereafter, however, the plaintiff experienced pain in his eyes and difficulty in breathing. He was taken to a hospital, where for the next twenty-four hours various fluids of one kind or another were constantly injected into his eyes. No opiates were administered. When he left the hospital the next day he was totally blind, and his sight never returned. Subsequently the plaintiff sued the defendant physician for damages alleged to have been caused by the defendant's negligence. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Washington.

The essence of the plaintiff's contention was that the defendant did not exercise reasonable care and skill in that he failed to irrigate the plaintiff's eyes with water. Expert witnesses for both parties testified that sulfur dioxide on contact with moisture immediately forms sulfurous acid and that sulfurous acid is very destructive. The plaintiff's expert testified that, in an emergency, the safest thing to do was to throw clean water in the patient's face in an attempt to remove or dilute any fluid or gaseous irritant. He would not admit, however, that such action by the defendant would, either wholly or partly, have saved the plaintiff's vision, although he thought it would probably have diminished the pain. The Supreme Court recalled that the plaintiff had made no complaint of pain during the defendant's visit and further pointed out that during most of that time the plaintiff held a saturated bandage over his eyes. The experts who testified on behalf of the defendant stated that the action of sulfurous acid is so rapid that nothing the defendant could have done would have saved the plaintiff's eyesight. In fact one of them said that damage to the eyes from sulfurous acid is almost instantaneous, a matter of seconds rather than minutes, and that after "a period of a moment or two there would be practically no hope of retention of vision or restoration of vision." These witnesses

also warned of the danger of putting ordinary water, which is not sterile and free from bacteria, into an already injured eye.

The Supreme Court held that a physician is not liable merely for making a wrong diagnosis unless an improper treatment follows. Here the defendant could not be held liable, continued the court, for failing to treat a condition of which he was unaware when the evidence showed that, even if he had been fully advised, he would not have acted differently. In conclusion the court held that, in view of the serious disagreement among qualified experts as to the advisability of so doing, the defendant was not guilty of malpractice in failing to apply water to the plaintiff's eyes. The judgment for the plaintiff was accordingly reversed.—*Peddicord v. Lieser*, 105 P. (2d) 5 (Wash., 1940).

Dental Practice Acts: Extent of Board's Discretionary Powers.—The plaintiff applied for a writ of mandamus to compel the defendant Florida State Board of Dental Examiners to issue him a certificate to practice dentistry in Florida or, in the alternative, to produce in court the examination papers written at certain previous examinations conducted by the board and cause them to be regraded by such method as the court might deem proper. The petition alleged that the preliminary moral, scholastic and professional qualifications of the plaintiff had been duly accepted by the defendant board and that he had passed the required examination with a sufficiently high mark, but that the defendant, even after three examinations, illegally, unlawfully, capriciously and from prejudice "flunked" the plaintiff and refused to issue him a certificate to practice dentistry. The defendant filed a motion to quash the alternative writ and refused to plead further. The lower court entered an order overruling the defendant's motion and granting the writ, so the defendant appealed to the Supreme Court of Florida.

The Supreme Court said that when an applicant to take the examination for a certificate to practice dentistry has complied with all the requirements of the law and the board has approved his application and admitted him to the examination, it becomes the duty of the board to issue him a certificate if he makes the mark required to pass. The effect of the defendant's motion to quash was to admit as true all facts sufficiently pleaded in the plaintiff's petition. The character and qualifications of the plaintiff were therefore conceded. The Supreme Court admitted that the defendant was vested with some discretionary powers. When an applicant applies and presents his credentials to take the examination, the board is the judge of these and it may reject the applicant if not shown to meet all the requirements. After he has qualified and passed the examination, in the absence of adverse showing, he cannot be deprived of a certificate. Administrative boards, the court pointed out, are vested with no such arbitrary hegemony over individual rights as was charged in this case. "Ours is still a government of laws and not one of men actuated by caprice and arbitrary power. The highest duty of the man or board whose duty is to administer laws, rules or regulations is to see that they bear equally on all persons or groups." Accordingly the Supreme Court held that the writ of mandamus had been properly issued and the judgment for the plaintiff was therefore affirmed.—*York v. State ex rel. Jones*, 107 So. 766 (Fla., 1940).

Medical Practice Act: Suspension of License for Assisting Unlicensed Person to Practice.—The Board of Regents, on the basis of a report by the Committee on Grievances, suspended for six months the defendant's license to practice medicine in the state of New York. It appeared from the evidence that the defendant collaborated with a chemist in attempting to remove a birthmark by the application of a new preparation, the formula for which was secret to the defendant and the chemist. The defendant permitted the chemist to treat and administer the preparation to the patient. The supreme court, appellate division, third department, New York, held that by this conduct the defendant assisted an unlicensed person to practice medicine unlawfully. The judgment of the Commissioner of Education, suspending the plaintiff's license to practice medicine, was therefore affirmed.—*La Roc v. Board of Regents of University of State of New York*, 23 N. Y. S. (2d) 265 (A. D., 1940).

Society Proceedings

COMING MEETINGS

- Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
- American Association for the Study of Gout, Atlanta, Ga., June 1-3. Dr. Thomas C. Davison, 478 Peachtree St. N. E., Atlanta, Ga., Secretary.
- American Association for the Study of Neoplastic Diseases, Winston Salem, N. C., April 23-25. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N. W., Washington, D. C., Secretary.
- American Association for the Surgery of Trauma, Boston, June 4-6. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.
- American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.
- American Association of Industrial Physicians and Surgeons, Cincinnati, Apr. 13-17. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
- American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.
- American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Nashua St., Boston, Secretary.
- American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.
- American Dermatological Association, Hot Springs, Va., May 31-June 4. Dr. Harry R. Foerster, 208 East Wisconsin Ave., Milwaukee, Secretary.
- American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.
- American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.
- American Laryngological, Rhinological and Otolological Society, Atlantic City, N. J., June 1-3. Dr. C. Stewart Nash, 227 Alexander St., Rochester, N. Y., Secretary.
- American Medical Women's Association, Atlantic City, N. J., June 6-7. Dr. Ada Chree Reid, 102 East 22d St., New York, Secretary.
- American Neurological Association, Chicago, June 4-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.
- American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
- American Orthopedic Association, Baltimore, June 3-6. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.
- American Otolological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Friesner, 101 East 73d St., New York, Secretary.
- American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Psychiatric Association, Boston, May 18-22. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.
- American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.
- American Society of Clinical Pathologists, Philadelphia, June 5-7. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.
- American Therapeutic Society, Atlantic City, N. J., June 4-6. Dr. Oscar B. Hunter, 1835 Eye St. N. W., Washington, D. C., Secretary.
- American Urological Association, New York, June 1-4. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.
- Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
- Association of American Physicians, Atlantic City, May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.
- California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.
- Connecticut State Medical Society, Middletown, June 3-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Florida Medical Association, Hollywood, Apr. 13-15. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
- Georgia, Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shank, 478 Peachtree St. N. E., Atlanta, Secretary.
- Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.
- Iowa State Medical Society, Des Moines, Apr. 15-17. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
- Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.
- Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
- Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shierelford, 1211 Cathedral St., Baltimore, Secretary.
- Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.
- Medical Library Association, New Orleans, May 2-9. Mrs. Anna C. Holt, 25 Shattuck St., Boston, Secretary.
- Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksville, Secretary.

- Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.
- National Gastroenterological Association, New York, June 3-5. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.
- National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.
- Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
- New Hampshire Medical Society, Manchester, May 12-13. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.
- New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.
- New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.
- North Carolina, Medical Society of the State of, Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.
- North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.
- Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.
- Oklahoma State Medical Association, Tulsa, April 22-24. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.
- Rhode Island Medical Society, Providence, June 3-4. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.
- Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 2. Dr. W. S. Spain, 116 East 53d St., New York, Secretary.
- Pacific Coast Oto-Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.
- South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian L. Price, 105 West Cheves St., Florence, Secretary.
- South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107½ Egan Avenue South, Madison, Secretary.
- Tennessee State Medical Association, Memphis, Apr. 14-16. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
- Texas, State Medical Association of, Houston, May 11-14. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fourteenth Annual Meeting, Held in Chicago, Nov. 7 and 8, 1941

The President, DR. LAWRENCE D. THOMPSON,
St. Louis, in the Chair

(Continued from page 1246)

Treatment of Parathyroid Tetany

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: Although it has been assumed that the best substitution therapy in hypoparathyroidism is the use of dihydrotachysterol, a recent discussion by McLean indicates that vitamin D is equally effective. Observations on 3 patients with post-thyroidectomy tetany and 1 with idiopathic hypoparathyroidism confirm this point of view. The approximate equivalence in potency is between 1 mg. of dihydrotachysterol (of commercial grade) and 40,000 international units of vitamin D. Comparison of retail costs shows that therapy with the vitamin preparations would cost from \$2 to \$8 as against \$1 for dihydrotachysterol. The greatest differential exists when the two types of material are secured from the same manufacturer. The advantages of using calcium chloride rather than the lactate, gluconate or phosphate as adjuvants in treating tetany are also demonstrable. Doses of 1 Gm. of the chloride are well tolerated if the salt is taken in the form of a 25 per cent solution in syrup of glycyrrhiza.

DISCUSSION

DR. ROBERT W. KEETON, Chicago: My associates and I have had an unusually interesting case of tetany under observation for a period of approximately four years. The patient had high grade mitral stenosis with but little cardiac reserve. In the days when total thyroidectomy was popular, this operation was performed on her. After the operative procedure she had a great deal of difficulty with tetany and decompensation. The decompensation did not respond to digitalis or to adequate doses of thyroid. We were able to establish compensation by the use of calcium and by controlling the tetany. This experiment was repeated on several occasions; so it confirms in an interesting

way the problem dwelt on by Dr. Sevringhaus; namely, tetany in a heart on the border of compensation may be a factor in producing decompensation and its control a factor in maintaining compensation. This patient was taking 1,000,000 units a day of vitamin D; with indifferent success. We had continually to resort to calcium. We then changed to dihydrotachysterol with a better result, but the control was not entirely satisfactory. She was given a low phosphorus diet with much greater success. While she was on this regimen pellagra developed, which was controlled by therapy with nicotinic acid. At present she is on a general diet and takes a colloidal suspension of aluminum hydroxide and dihydrotachysterol, and her condition is well controlled.

DR. E. PERRY McCULLAGH, Cleveland: In the treatment of parathyroid tetany it is a practical matter indeed to give the patient as much calcium as possible because all other forms of treatment are expensive. We believe that more total calcium can be given to the patient as calcium lactate than as calcium chloride because as a rule the patient tolerates the lactate much better. In the majority of cases tetany will be completely controlled without any other measures if the patient is given sufficient calcium. Apparently a patient can take large doses of calcium lactate for many years without any disturbance. Our patients with severe tetany are given as much calcium lactate as 3 heaping teaspoons four times a day. This supplies a great deal of calcium, and it would be difficult to give the same amount in the form of calcium chloride. It occasionally happens that the patient does not tolerate calcium lactate in powder form; a simple solution can then be made at home by boiling the drug in water.

DR. CYRIL M. MACBRYDE, St. Louis: I have had the same problem that Dr. Sevringhaus has been describing here. Another practical point is that it is important to keep these patients on a diet as nearly normal as possible. It is not well to keep the patient on a low phosphorus diet all the rest of his life. It is well to supply milk even though it does give the patient a pretty good phosphorus intake. The patient may take a quart of milk a day. I used to use a lot of phosphorus diets and restrict milk, before dihydrotachysterol and vitamin D were available. My experience is that it is no longer necessary to keep the patient on a low phosphorus diet. I believe the condition is more completely and more satisfactorily controlled if the patient is given an ordinary diet. I find that large doses of calcium lactate can be easily taken by patients with parathyroid tetany, and vitamin D can be given; so the control is completely satisfactory. I have not seen what Dr. Sevringhaus has spoken of as an unstable blood calcium level. It has been my experience that the blood calcium level has been stable. It has remained practically stable for years in patients given dihydrotachysterol or vitamin D or 10 to 15 Gm. of calcium lactate by mouth a day and no additional phosphorus.

DR. FREDERICK S. COOMBS, Youngstown, Ohio: I have had occasion recently to treat a woman with tetany from postoperative causes. At the start of therapy the blood calcium was 5 mg. per hundred cubic centimeters. In ten days, with the use of dihydrotachysterol and a quart of skimmed milk a day, the blood calcium came up to 8.6 mg. and she was relieved of her symptoms. I have not used additional calcium by mouth. I wonder whether this calcium is not excreted in the intestine.

DR. ELMER L. SEVRINGHAUS, Madison, Wis.: One of the issues that comes of this discussion is the definition of complete control of tetany. It is not as easy to describe as complete control of diabetes or of hypothyroidism, but it ought to be attempted clinically. Complete control does not mean only that there is freedom from tetanic symptoms. This can be confirmed by observations made by the patients given calcium who have no tetanic seizures. They are made much better by therapy with solution of parathyroid, vitamin D or dihydrotachysterol. The definition of complete control needs to be studied. I feel that when the cost of materials becomes lower so that vitamin D or dihydrotachysterol can be used in optimal levels over a

long period, one can secure stability resembling the normal. That is what would be expected if one can supply the deficiency. To date I have had to use minimal doses to secure fair health rather than excellent health. If one can give optimal doses of vitamin D, one can study calcium absorption from the bowel and find how much calcium is necessary for a normal intake.

The Distribution of Serum Proteins in Hepatic Diseases as Determined by Electrophoresis

DRS. SEYMOUR GRAY and E. S. GUZMAN-BARRON, Chicago: When serum proteins are subjected to the action of an electric current at low temperatures and in well buffered solutions they migrate according to their electric mobilities. This property was taken advantage of by Tiselius to separate and measure quantitatively the concentration of the different proteins which exist in the blood serum. The Tiselius electrophoresis apparatus, as modified by Longworth, has been used to study the distribution of the proteins in the blood serum of patients with a variety of diseases of the liver. Electrophoresis patterns of the serum of patients with acute hepatitis reveal an alteration of the distribution of albumin and of the three globulins, alpha, beta and gamma; in most cases in which the albumin-globulin ratio was normal there was observed a large increase of gamma globulin. In cases of cirrhosis of the liver there was an increase of beta and gamma globulin; in cases of stone of the common bile duct and severe jaundice the beta globulin was increased; changes were also observed in cancer of the liver.

Palindromic Rheumatism

DRS. PHILIP S. HENCH and EDWARD F. ROSENBERG, Rochester, Minn.: Features of this disease are multiple afebrile attacks of acute arthritis, periartthritis and sometimes also para-artthritis, with pain, swelling, redness and disability of generally one, sometimes several, small or large joints in an adult of either sex. Attacks appear suddenly, develop rapidly, generally last only a few hours or days and then disappear completely but recur at short or long irregularly spaced intervals. Despite the transitory presence of an acute or a subacute inflammatory reaction in joint tissues and a fibrinopurulent exudate in the articular cavity, little or no constitutional reaction of abnormality is evidenced by the results of laboratory tests, and no significant functional, pathologic or roentgenographic residues occur even after years of disease and scores or even hundreds of attacks.

Of 34 patients, 19 were female and 15 male. Patients were aged 13 to 68 (generally 20 to 39) at the onset of the disease, which at the time of their admission to the Mayo Clinic had lasted from three months to twenty-five years (the average was seven years). Attacks had occurred at the rate of two to ten yearly in 9 cases, twenty to sixty yearly in 17 cases, one hundred to two hundred yearly in 3 cases and two hundred and fifty or more a year in 5 cases. Four patients had had "hundreds" of attacks; the other 30 had had at least four thousand, nine hundred and thirty attacks and an average of at least one hundred and sixty-four attacks per patient within the average of seven years of illness, or twenty-three attacks per patient yearly.

Attacks lasted usually one to three, rarely more than seven, days. The intervals between attacks varied from a few days to six months. In 90 per cent of the cases the attacks were monoarticular and chiefly in a finger, wrist, shoulder, knee, toe or elbow. Pain was mild to severe; temporary disability was often considerable. Para-articular inflammation of short duration (six to twenty-four hours) at characteristic sites affected 10 patients. Intracutaneous or subcutaneous nodules were present transiently in 3 cases. Anorexia, loss of weight, anemia, leukocytosis and eosinophilia (the last in both blood and tissues) were absent. The sedimentation rate was normal or slightly elevated; moderate lipemia was present. Roentgenograms of joints revealed nothing abnormal. Biopsies showed acute inflammation during attacks but no gross or microscopic abnormalities between attacks; cultures of tissue removed were sterile.

The cause of the disease was not determined. The hypothesis that allergy was the causative factor could not be proved. The disease was distinguished from rheumatoid arthritis, intermittent hydrarthrosis, gout, angioneural arthrosis (Cohen, 1913) and the "allergic rheumatism" of Kahlmeter (1939). Of the many remedies tried none gave impressive results; fever therapy may have modified the condition somewhat. Follow-up data in 27 cases indicated that, although spontaneous cure occasionally occurred, the condition tended to continue with its pattern relatively unchanged, but permanent crippling did not occur despite thousands of attacks suffered during a total of three hundred and seven years of illness (two hundred and forty-two years before plus sixty-five years after admission).

DISCUSSION

DR. RICHARD H. FREYBERG, Ann Arbor, Mich.: The syndrome which Dr. Hench has described is indeed interesting. I would urge that every one who sees patients with rheumatic disease keep this description in mind and attempt to identify the condition. It is my belief that there are different types of inflammatory joint disease whose cause is not known, all of which are commonly called "rheumatoid arthritis" even though the syndrome does not have many of the characteristics of rheumatoid arthritis. In other words, I wonder if rheumatoid arthritis is not the wastebasket into which various types of rheumatic disease incompletely understood and not readily identified as distinct forms of rheumatism are unjustifiably thrown. Certainly the condition in the cases described by Drs. Hench and Rosenberg does not seem to be like the commonly recognized types of rheumatic disease. The follow-up study of these cases will be interesting. I should like to ask whether there is any tendency for this disease to occur in families.

DR. LEE FOSHAY, Cincinnati: Was there opportunity to try animal transmission experiments with materials obtained from any of these patients?

DR. LAWRENCE D. THOMPSON, St. Louis: I have been following a patient in St. Louis for nine months whose condition unquestionably corresponds to the condition described. There are two interesting facts in this case. In the first place, Dr. Foshay might be interested to know that the agglutinations for the patients with undulant fever were positive in a dilution of 1:120. The second point is that, by merely prescribing for this patient a diet from which I had eliminated six or eight foods which in my own experience have been most common allergic offenders, I was able to reduce the symptoms from daily attacks to sudden unexplainable attacks at weekly or biweekly intervals. In other words, I seemed to get some improvement by working along the allergy line. I should like to know whether Dr. Foshay has seen patients with undulant fever with symptoms similar to those described by Dr. Hench.

DR. PHILIP S. HENCH, Rochester, Minn.: We found no familial or hereditary features in this disease. To answer Dr. Foshay's question, we could not prove the infective nature of palindromic rheumatism. The attacks bore no relationship to acute exogenous infections, such as sore throats and influenza. Most of the patients had had their foci of infection removed without relief before we saw them. Cultures of material from remaining foci revealed no significant organisms; the bacteria found therein produced no positive cutaneous reactions in patients or significant lesions in animals. Cultures of material removed for biopsy were sterile. However, we did not do what Dr. Foshay suggests, i. e. grind up a nodule or other affected tissue and use this material for inoculation experiments. We will try to do that. Agglutination tests for *Brucella abortus* were made in 5 cases: they gave negative results in 4 and a slightly positive result (1:80) in 1, a reaction of doubtful significance. None of our patients had fever. I agree with Dr. Thompson that the allergic hypothesis seems attractive. We did our best to prove it but could not do so. Points against the allergic hypothesis were (1) the complete absence of orthodox clinical allergy in many of the cases, (2) the generally negative cutaneous reactions to various antigens including suspected foods, (3) the absence

of eosinophilia in blood or affected tissues, (4) the lack of resemblance between the pathologic reactions we noted in palindromic rheumatism and those in conditions known to be allergic (for example, urticaria), (5) the generally negative effect of epinephrine and histaminase and of histamine desensitization, (6) the negative provocative effect of histamine in large doses and (7) the negative results of provocative and therapeutic tests with suspected foods. One or two of our patients felt somewhat better (perhaps having fewer, shorter attacks) when they adhered to a diet free of suspected food antigens; the diet certainly did not stop the disease, although it may have modified it. I fully agree with Dr. Thompson that further investigation along the lines of allergy in this disease are in order, but my colleagues at the Mayo Clinic in the section for allergic diseases have about despaired of proving the presence of allergy. It is of special significance that 3 of our patients were physicians; they had been long puzzled as to the nature of their disease and had long since rejected as entirely inappropriate diagnoses such as rheumatoid arthritis or those of other known diseases of joints.

Cerebral Oxygen Consumption Following Experimental Injury to the Head

DRS. JOHN L. LINDQUIST and GEORGE V. LEROY, Chicago: To investigate the pathogenesis of the symptoms of cerebral concussion, studies of the cerebral oxygen consumption and cerebral blood flow were made. A Rein type thermostromuhr was used to measure the cerebral minute blood flow, and the arteriovenous oxygen difference was determined manometrically on blood drawn simultaneously from an artery and a jugular vein. All experiments were performed on dogs lightly anesthetized with soluble pentobarbital. In the first experiments cerebral blood flow and oxygen consumption were measured at intervals from twenty to forty minutes after a severe cranial trauma. The usual result of the injury was a rapid and early decline in both the blood flow and the oxygen consumption. In a series of 8 dogs the decrease in the former value averaged 17 per cent and in the latter 24 per cent.

Another series of observations was made on 10 dogs whose heads were traumatized twenty-four hours earlier. At this time the following deviations from normal were observed: (1) The cerebral blood flow averaged 19 per cent below normal; (2) the cerebral oxygen consumption averaged 21 per cent below normal; (3) the arterial oxygen saturation was 73, 76, 78, 81, 84, 89 and 91 per cent, respectively, in the dogs for which it was determined. It was apparent from the data that the altered oxygen consumption of the brain was not due to stasis or to arterial hypoxemia but was due to an inability of the brain to utilize the gas.

The fact having been established that the cerebral oxygen consumption and blood flow were still subnormal twenty-four hours after injury, it was desirable to observe the influence of two commonly used therapeutic agents on these functions. Four of the animals studied twenty-four hours after injury were given hypertonic sugar solutions, and from 3 cerebrospinal fluid was removed by cisternal drainage. Three animals were used for controls. The injections of hypertonic solutions of dextrose and sucrose had no effect on the blood flow. This is in accord with other investigators' studies. The effect on oxygen consumption, however, was striking. With 50 per cent sucrose solution, oxygen utilization increased by 45 and 100 per cent. With dextrose the increases were 90 per cent and 130 per cent respectively. After cisternal drainage there was a 25 per cent improvement in the cerebral blood flow. The oxygen consumption increased 100 per cent and 260 per cent in 2 instances. For technical reasons there was no apparent change in the third animal. Suitable control experiments were performed.

These experiments demonstrate a physiologic basis for the altered cerebral activity after injury to the head severe enough to cause concussion. They show also that if reduced cerebral oxygen consumption occurs it may be corrected by the administration of hypertonic solutions of dextrose and sucrose or by the drainage of cerebrospinal fluid. We think that these experi-

ments in addition to suggesting a reason for the alterations in consciousness suggest also a rational basis for the use of two common therapeutic agents.

The Use of Poudrage in Chronic Pneumothorax and Cystic Disease of the Lung

DR. DAN W. MYERS, St. Louis: In 25 of 45 instances of spontaneous pneumothorax observed the pneumothorax was of the so-called benign variety unaccompanied by recognizable pulmonary disease. Prompt closure of the pleuropulmonary communication and reexpansion of the lung ensued in all but 1 case. After protracted rest, intrapleural instillations of blood and dextrose and the trauma of thoracoscopic inspection of the pleura had failed to produce closure of the fistula, pleural poudrage was carried out, 5 Gm. of iodized talc being sprayed into the pleural space. Prompt sealing of the pleuropulmonary communication and reexpansion of the lung resulted. The belief is expressed that iodized talc is a more effective agent for the production of aseptic pleuritis than the agents previously employed in the obliteration of such fistulas. Treatment of a giant tension cyst of the lung by means of intracystic powdering with iodized talc also was successful.

DISCUSSION

DR. WILLIAM H. BUNN, Youngstown, Ohio: In 1924 I had a patient aged 46 who had dyspnea produced by a collection of fluid in the right side of the chest. On withdrawal of the fluid there were many cholesterol crystals; their presence, of course, suggested that the fluid had been present for months or years. Repeated withdrawal of the fluid meant only that it recurred. Artificial pneumothorax was instituted after each withdrawal of fluid. Still the fluid kept forming. The patient unfortunately had a fall down several steps and struck her side forcibly enough to tear the lung. After this high air pressure built up in the right thoracic cavity. This required aspiration on several occasions. Finally gomenol (a cajuput oil from *Melaleuca viridiflora*) was instilled, adhesions quickly formed and complete recovery occurred. In 1 other case gomenol was successfully instilled into the pericardial sac of a boy who had required (until this measure was instituted) repeated tapings to relieve the pressure of accumulations of pericardial fluid. There is a place in clinical medicine for some stimulant to the formation of adhesions.

Urea and Sulfonamide Urolithiasis

DRS. SIDNEY S. SOBIN, LAWRENCE M. ARONBERG and HARRY ROLNICK, Chicago: Previous studies on the solubility of the acetyl sulfonamides in human urine (presented before this society in November 1940) demonstrated that the solubility of these substances increased in urine of increasing specific gravity (or concentration). The probable relationship of this unusual phenomenon to an increasing amount of urea was suggested and evidence presented.

In the present work the effect of urea on the renal concretions resulting from the oral administration of sodium acetylsulfapyridine to white rats was studied. Animals receiving sodium acetylsulfapyridine with and without urea were studied for seven to nine days. Changes in weight, water intake and general nutrition were noted. Animals treated with sodium acetylsulfapyridine alone frequently presented hematuria which was not constant from day to day. Hematuria, however, was not observed in any of the rats receiving urea with the drug. The animals not receiving urea frequently appeared ill and listless and took their food poorly. This was not true of the urea treated rats.

Microscopic review of the kidney tissues revealed concretions in many of the animals receiving sodium acetylsulfapyridine alone. In animals receiving urea as well, no concretions were found. Extreme cloudy swelling and simple necrosis of the tubular elements and loops was encountered in the controls. This was only rarely seen in the urea treated rats.

It is suggested that urea has some solvent action on acetylsulfapyridine crystals *in vivo* as well as *in vitro*.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

23:1-146 (Jan) 1942

- Some Immediate Causes of Cardiac Infarction. E. P. Boas, New York. —p. 1.
- Heart Disease and Public Health: Current Trends and Prospects. L. I. Dublin, New York.—p. 16.
- *Value of Combined Measurements of Venous Pressure and Arm to Tongue and Arm to Lung Circulation Times in Study of Heart Failure. H. H. Hussey, J. J. Wallace and J. C. Sullivan, Washington, D. C.—p. 22.
- Action of Angiotonin on Completely Isolated Mammalian Heart. V. Lorber, Minneapolis.—p. 37.
- Autonomic Mechanism of Heat Conservation and Dissipation: II. Effects of Cooling Body, Comparison of Peripheral and Central Vasomotor Responses to Cold. O. R. Hyndman and J. Wolkin, Iowa City.—p. 43.
- *Electrocardiographic Study of Effects of Boxing. J. S. Butterworth and C. A. Poindexter, New York.—p. 59.
- *Recording of Fetal Electrocardiogram. J. W. Ward and J. A. Kennedy, Nashville, Tenn.—p. 64.
- Study of Seventy Rheumatic Families. A. Rosenblum and Ruth L. Rosenblum, Chicago.—p. 71.
- Resting Blood Flow and Peripheral Vascular Responses in Hypertensive Subjects. D. I. Abramson and S. M. Fierst, Cincinnati.—p. 84.
- Coarctation of Aorta in Children: Syndrome of Constriction of Isthmus of Aorta, with Involvement of Origin of Left Subclavian Artery. S. P. Schwartz and D. Greene, New York.—p. 99.
- Improved Blood Pressure Cuff. W. S. Collins and L. C. Boas, Brooklyn.—p. 114.
- Device for Obtaining Electrocardiographic Leads from Precordium. M. S. White, Randolph Field, Texas.—p. 116.

Venous Pressure and Circulation Time in Heart Failure.—Hussey and his co-workers made one hundred and eighty-five simultaneous measurements of the venous pressure and circulation time of 100 patients with congestive heart failure. The study shows that the venous pressure is abnormally elevated or shows a significant rise when the abdomen is compressed and that the arm to tongue and the arm to lung circulation times are usually prolonged. When clinical improvement occurs the arm to tongue circulation time may remain prolonged after all other signs of heart failure have disappeared. This presumably indicates the persistence of left ventricular failure. The study of 7 patients suggested isolated left ventricular failure; the venous pressure and the arm to lung circulation time were normal, but the arm to tongue circulation time was prolonged. Among 34 patients with general heart failure the lung to tongue circulation time was within normal limits. This tends to impair the value of this measurement in the diagnosis of isolated right ventricular failure. In heart failure the venous pressure may be abnormally high or rise significantly on abdominal compression when other signs of failure are lacking. Repeated measurements of the venous pressure and circulation time in heart failure afford an objective means of following the course of the disease and are necessary for accurate diagnostic appraisal. The measurements often can be of value in ruling out heart failure.

Effect of Boxing on the Heart.—Butterworth and Poindexter obtained electrocardiograms of 35 boxers (16 to 24 years of age) before and after bouts. Before a bout the average heart rate was 81, and after the bout it was 115 beats a minute. Sinus arrhythmia was common before matches but was absent or slight at the higher rates after the matches. After the exercise there was a definite increase in the height of P₂ and P₃ and a decrease in the size of the T waves. The study presents no evidence that boxing has any traumatic effect on the normal heart of the young boxer.

Fetal Electrocardiogram.—Ward and Kennedy made forty-six recordings of the fetal heart beat during various stages of intrauterine life. They used a three channel, balanced amplifier and crytograph, an instrument developed to record electroencephalograms. Three abdominal leads were usually employed and were placed to form an equilateral triangle over the uterus. The curves were recorded in ink on paper by the crytograph, a permanent record thus being made. No developing was necessary. The length of pregnancy was calculated by assuming that conception occurred fourteen days after the last normal menstrual flow began. The fetal deflections measure about 30 microvolts. The fetal waves usually appear in one lead. Deflections were produced in thirty-one of the forty-six records. The remainder showed no definite fetal deflections, except one which was questionable. No positive tracing was obtained earlier than the sixteenth week of pregnancy. There was a sharp dividing line between the positive and negative records near the end of the fourth month. From the sixteenth week thirty-eight records were taken, and thirty-one of these were positive. For comparison records were made of 1 woman on the same day with the ordinary electrocardiographic apparatus and with the Offner amplifier and crytograph. With the former instrument, even with double standardization, no fetal waves were shown, but good fetal waves were obtained with the crytograph. The method should prove useful in the diagnosis of pregnancy, in ascertaining whether the fetus is living, in the diagnosis of multiple pregnancy and, experimentally, as a tool for studying fetal physiology.

American Journal of Hygiene, Baltimore

35:1-162 (Jan.) 1942

- Multiple Sclerosis Problem in Baltimore City. L. C. Kolb, O. R. Langworthy and Marie Cakrova, Baltimore.—p. 1.
- Statistical Problems Involved in Application of National Institute of Health Swab for Diagnosis of Oxyuriasis. W. Sawitz, New Orleans, and B. D. Karpinos, Washington, D. C.—p. 15.
- *Influence of Atmospheric Temperature and Humidity on Dryness of Oral Mucosa. C. E. A. Winslow, L. P. Herrington and Jean Hume Nelbach, New Haven, Conn.—p. 27.
- Effect of Epinephrine on Toxicity of Nicotine. H. B. Haag and R. S. Fisher, Richmond, Va.—p. 40.
- Diphtheria in Baltimore: Tonsillectomies as Related to Diphtheria Carrier Rates. K. F. Maves, J. J. Phair, Baltimore, and Mary Ruth Smith, Jackson, Miss.—p. 42.
- Id.: Carrier Rate in Twelve Surveys, 1921-1939. J. J. Phair, Baltimore, and Mary Ruth Smith, Jackson, Miss.—p. 47.
- Study in Active Immunization Against Epidemic Influenza and Pneumococcal Pneumonia at Letchworth Village: III. Results of Active Immunization Against Epidemic Influenza from 1937 to 1940. M. Siegel, R. S. Muckenfuss, M. Schaeffer, Harriet Leslie Wileox and Ann G. Leeder, New York.—p. 55.
- *Environmental Control of Epidemic Contagion: I. Epidemiologic Study of Radiant Disinfection of Air in Day Schools. W. F. Wells, Mildred W. Wells and T. S. Wulder, Philadelphia.—p. 97.
- Study of Certain Epidemiologic Features of Lepidospiral Jaundice in Baltimore. T. G. Ward and T. B. Turner, Baltimore.—p. 122.
- Inoculation of Canaries with Sporozoites from Isolated Malarial Oocysts. M. M. Brooke, Baltimore.—p. 134.
- Study of Paroxysms Resulting from Induced Infections of Plasmodium Vivax. G. R. Coatsy and M. D. Young, Columbia, S. C.—p. 138.
- Feeding Habits of *Gambusia Affinis Affinis*, with Special Reference to Malaria Mosquito *Anopheles Quadrimaculatus*. A. D. Hess and C. M. Tarzwell.—p. 142.
- Respiratory Metabolism of Malaria Parasite *Plasmodium Cathemerium* During Its Developmental Cycle. S. F. Velick, Baltimore.—p. 152.

Atmospheric Conditions and Oral Mucosa.—Winslow and his collaborators determined the effect of various degrees of temperature and humidity on the mucous membranes of 4 subjects. With a vapor pressure of up to or above $\frac{1}{10}$ inch of mercury the moisture of the surface of the oral mucosa, depending on variations in temperature and humidity, varied from a moderately high to an extremely high value. The variations were attributed to the physiologic changes in the vascular system of the mucosa. With vapor pressures below $\frac{1}{10}$ inch there was a definite dryness of the oral mucosa; its surface moisture was about half that observed at higher vapor pressures. The authors conclude that a pronounced drying effect on the mucosa must occur at air temperatures below 53 F. with any moisture content, at 60 with less than 77 per cent relative humidity, at 70 with less than 54 per cent relative humidity and at 80 F. with less than 39 per cent relative humidity. Whether the drying effect is harmful has not been determined, but, if it is harmful, outdoor air in winter must have as serious

an effect as dry indoor air. The effect can be controlled indoors with an air temperature of 70 F and a relative humidity of more than 50 per cent.

Radiant Disinfection of Air.—The Wellcs and Wilder report experiments which demonstrate that confined atmospheres of habitations constitute a vehicle for the epidemic spread of contagion. During the four years in the Germantown Friends School and the one year in the Swarthmore public schools when the air of the schoolrooms was irradiated there was no epidemic spread of contagion among the highly susceptible primary school children, although contagion did spread among less susceptible groups of older children in other departments of the schools whose rooms were not irradiated. The results suggest that the occurrence of contagious diseases at unfavorable times (measles in midwinter, when the danger of complicating streptococcal infections is high) and in unfavorable situations (such as that of an army in barracks) can be prevented by irradiation of air.

American J. Obstetrics and Gynecology, St. Louis

43:1-182 (Jan) 1942 Partial Index

- Nutrition Study in Pregnancy Dietary Analyses of Seven Day Food Intake Records of 514 Pregnant Women, Comparison of Actual Food Intakes with Various Stated Requirements and Relationship of Food Intake to Various Obstetric Factors P T Williams and Florence C Fralin, Philadelphia—p 1
- *Clinical Evaluation of Fetal Electrocardiography Study of 100 Cases by New Technique and Improved Instrument P Bernstein and H Mann, New York—p 21
- *Glomerular Filtration and Renal Blood Flow in Toxemias of Pregnancy L V Dill, C E Isenhour, J F Cadden and N K Schaffer, New York—p 32
- Simultaneous Radiologic and Kinetic Recording of Uterine and Tubal Motility M D Mayer, H Newman and A M Ginzler, New York—p 52
- Chorioepithelioma Study of Thirteen Cases R R de Alvarez, Ann Arbor, Mich—p 59
- Gynecologic Tuberculosis Brief Review of Thirty Two Cases Including One of Tuberculous Cervicitis E Eichner, A Bookatz and L Hirsch, Cleveland—p 66
- *Further Studies on Sterile and Fertile Periods in Women L J Latz and E Reiner, Chicago—p 74
- Inhibition of Lactation During Puerperium by Methyl Testosterone F M Lass, New York—p 86
- Caffeine as Aid to Sodium Pentobarbital Analgesia in Labor A F Daro and P J Stein, Chicago—p 94
- Use of Quick Freezing Methods in Gynecologic Practice Preliminary Report T E Hall, Chicago—p 105
- Bilateral Tubal Pregnancy M E Cox and M Steinberg, Charleston, S C—p 120
- Desmoid Tumor of Back J A Tutta and E W Fischmann, Chicago—p 124
- "Prog" Test (Xenopus Laevis) as Rapid Diagnostic Test for Pregnancy Preliminary Report A I Weissman, A P Snyder and C W Coates, New York—p 135

Fetal Electrocardiography—Bernstein and Mann recorded heart beats of 100 fetuses whose mothers were unselected consecutive patients presenting themselves at an antepartum clinic at the fifth or sixth month of gestation. Only 13 mothers were seen before the fifth month. The instrument used was the "cardiette," an unusually sensitive amplifying apparatus capable of detecting deflections up to 6 cm per millivolt and having approximately six times the sensitivity of the standard string galvanometer. In only 2 cases were satisfactory fetal curves not exhibited at some time during pregnancy. Of one hundred and fifty-three tests performed on the 100 patients 75 per cent showed clearcut fetal curves. No positive electrocardiograms were obtained earlier than the fourth lunar month. The individual monthly percentage of positive results ranged from 53.8 to 96.5 per cent, the average from the fourth to the tenth lunar month was 77.8 per cent. In the last two months 96 per cent of forty-eight readings were positive. The fetal heart rate does not indicate the sex of the fetus, since the heart rates of infants of both sexes averaged 148.7 beats per minute. There was a tendency for a gradual but definite decline in the fetal heart rate to the eighth lunar month, from then on to delivery there was a slight rise. Fetal and maternal rates were not correlative, a change in one was not necessarily accompanied by a corresponding alteration in the other. The electrocardiogram furnished a reliable diagnostic test in pseudocyesis of the menopause, pregnancy suspected in amenorrhea with a large fibroid and huge ovarian cyst and in missed abortion. The electrocardiogram was successful in indicating fetal viability in 4

instances in which fetal movements were not felt and the fetal heart was inaudible. One multiple pregnancy was accurately diagnosed. Generally, fetal hearts show sinus arrhythmias and sometimes extrasystoles and varying degrees of partial block. A peculiar increased rate is produced in the presence of intra-uterine anomalies. In instances of doubtful viability an electrocardiogram is indicated before cesarean section is performed.

Renal Blood Flow in Toxemias—Dill and his associates determined the inulin and diodrast clearances of 8 normal pregnant women who were within one month of term, had had no previous history of hypertension or toxemia of pregnancy and had not had changes of blood pressure in the retinal vessels or albuminuria, of 10 patients who had albuminuria, the albumin in the urine amounting to more than 2 Gm a day, hypertension, edema and a rapid gain in weight but no antecedent history of "toxemia of pregnancy" and who were classified as having "severe preeclampsia," and of 10 patients who had moderate to definite hypertension, mild to moderate albuminuria, a previous history of hypertension and changes in the eyegrounds and whose previous pregnancies were classified as "toxic." In the "preeclamptic" and "hypertensive" patients the postpartum glomerular filtration tended to return to normal and the renal blood flow fell to a level definitely below normal. The same mechanism that produces hypertension without pregnancy probably is operative in the woman with "toxemia of pregnancy." Pregnancy modifies the disease quantitatively in that the renal blood flow is maintained despite moderate renal arteriolar constriction and qualitatively in that the afferent arteriolar tone is increased to a greater extent than in the nonpregnant hypertensive patient, but the differences are merely quantitative modifications of the same fundamental vascular abnormality.

Sterile and Fertile Periods in Women—Latz and Reiner present a compilation of the data of some 1,000 record calendars sent in within the last year and a half by women who kept written records of menstruation, coition and ovulation for a number of years. For example, seven hundred and eighty-four thirty day cycles were recorded for 342 women, these same women also had other cycles. Ovulation and the number of coitions had on the various days of the cycle were recorded. For example, the 223 women who had, collectively, seven hundred and twenty-four twenty-four day cycles had among them ten coitions on the second day after the onset of menstruation, thirty-two on the third, seventy-eight on the fourth and so on. All told, there were 11,249 cycles and 49,356 coitions listed with no conceptions. Practical proof that ovulation must occur at about the time generally believed, that the time for fertilization of the ovum is short and that the life of the sperm cells in the female genitals is limited to less than forty-eight hours is had from the records of these women. If this were not the case a number of pregnancies would have occurred, as it cannot be assumed that more than an average percentage of the couples furnishing the data were sterile. The authors believe that the data on 4,702 coitions of 114 couples (reported in THE JOURNAL, Oct 19, 1935, p 1241), on 11,222 coitions of 265 couples (Illinois Medical Journal 71:210 [March] 1937) and on 54,027 coitions (under discussion) executed during the sterile period support the evidence that abstinence during the fertile period (as originally propounded by Knaus) prevents conception.

American Journal of Orthopsychiatry, Menasha, Wis.

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- Direct Psychotherapy in Adolescence Case Presentation M Gutkin and E I Falkstein, Chicago—p 1
- Problem of the Preadolescent Child H S Lippman, St Paul, Margaret W Gerard, Chicago and Edith B Jackson, New Haven, Conn—p 42
- Clinical Application of Test of Imagination to Neurotic Children Eva Ruth Balken and A H Veer, Chicago—p 68
- Diagnostic and Prognostic Significance of Differences Between Intelligence Quotient and Social Quotient II Relationship of Intelligence Quotient and Social Quotient to Age Level of Behavior Problem Children L A Lurie, Florence M Rosenthal and Louise C Olt, Cincinnati—p 104
- Group Studies of Preadolescent Delinquent Boys Spontaneous Group Formations on Children's Psychiatric Ward of Bellevue Hospital Pauline Rosenthal, New York—p 115
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- Child Guidance in Kindergarten to 6th Elementary School Clinical and Educational Contributions of Three Year Program S G Morg, New York—p 161

American Journal of Physiology, Baltimore

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- Iron Absorption in Absence of Bile. P. W. Smith and L. A. Crandall Jr., Memphis, Tenn.—p. 259.
- Studies on Biologic Utilization of Esters of Pantothenic Acid. K. Unna and C. W. Mushetti, Rahway, N. J.—p. 267.
- Effects of Asphyxia, Anoxia and Myocardial Ischemia on Coronary Blood Flow. H. D. Green and R. Węgrla, Cleveland.—p. 271.
- Reversals of Blood Pressure Responses Caused by Changes in Frequency of Brain Stem Stimulation. C. Berry, W. McKinley and R. Hodes, Chicago.—p. 338.
- Renal Blood Flow in Experimental Renal Hypertension. A. C. Corcoran and I. H. Page, Indianapolis.—p. 361.
- Mechanisms for Maintenance of Life in Newborn During Anoxia. H. E. Himwich, A. O. Bernstein, H. Herrlich, A. Chesler and J. F. Fazekas, Albany, N. Y.—p. 387.
- Thyroid and Parathyroid Hormone Effects on Calcium and Phosphorus Metabolism. M. A. Logan, W. R. Christensen and J. W. Kirklin, Boston.—p. 419.
- Temperature Sensation: Spatial Summation of Heat. C. M. Herget and J. D. Hardy, New York.—p. 426.
- Distribution of Available Water in Animal Body. L. J. Flemister, Durham, N. C.—p. 430.
- Central Pathway for Jaw Jerk. F. Harrison and K. B. Corbin, Memphis, Tenn.—p. 439.
- Effect of Adrenal Cortical Compounds on Ketosis. R. A. Shipley, Cleveland, and Edith G. Fry, New Haven, Conn.—p. 460.
- Increased Requirements of Pantothenic Acid and Vitamin B₆ During Experimental Hyperthyroidism. V. A. Drill and R. Overman, Princeton, N. J.—p. 474.
- In Vivo and In Vitro Exchange of Phosphorus by Enamel and Dentin. C. P. Darnum and W. D. Armstrong, Minneapolis.—p. 478.
- Bone and Tissue Phosphatase in Experimental Scurvy and Studies on Source of Serum Phosphatase. B. S. Gould and H. Shwachman, Boston.—p. 485.
- Calcium in Gastric Mucus and Regulation of Gastric Acidity. Rhoda Grant, Montreal, Canada.—p. 496.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

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- Philosophical and Practical Aspects of Economics of Cancer Control: Janeway Lecture, 1941. E. H. Skinner, Kansas City, Mo.—p. 1.
- Cancer of Nasal Cavity. W. S. MacComb and H. E. Martin, New York.—p. 11.
- *Irradiation Pulmonary Fibrosis. B. P. Widmann, Philadelphia.—p. 24.
- *Carcinoma of Lower Lip: Interval Statistical Survey of End Results in All Cases Treated at Brooklyn Cancer Institute, 1930 to 1939 Inclusive. W. E. Howes and F. J. La Rosa, Brooklyn.—p. 39.
- Results of Conservative Treatment in Certain Cerebral Gliomas. E. L. Jenkinson and E. Oldberg, Chicago.—p. 50.
- *Irradiation Sickness: Critical Study. S. S. Steinberg, Butte, Mont.—p. 56.
- *Discussion on Surveys on Chest, with Comments on 14 by 17 Inch Film as Used in Canadian Army. G. E. Richards, Toronto, Canada.—p. 66.
- Technical Factors Underlying Miniature Roentgenography of Chest. H. E. Potter, Chicago.—p. 71.
- Evaluation of Methods for Mass Survey of Chest. A. C. Christie, Washington, D. C.—p. 76.
- Value of Body Section Roentgenography (Planigraphy) for Demonstration of Tumors, Non-Neoplastic Disease and Foreign Bodies in Neck and Chest. B. R. Young, Philadelphia.—p. 83.
- Fractures of Pelvis, with Special Reference to Associated Fractures of Sacrum. W. W. Furey, Chicago.—p. 89.
- Time of Appearance and Fusion of Ossification Centers as Observed by Roentgenographic Methods. H. Flecker, Cairns, North Queensland, Australia.—p. 97.

Irradiation Pulmonary Fibrosis.—Widmann made a clinical and roentgenologic study of chests of 273 patients who had received irradiation to the chest for cancer. Pulmonary fibrosis with atelectasis was a permanent change and appeared in varying degree within two to twelve months after irradiation with an intensity of 1,600 to 2,000 roentgens in one cycle and with doses of 3,000 to 6,000 roentgens in two or more cycles to each of three or four cutaneous ports. Of the 273 patients, 62 showed roentgen evidence of fibrosis, and 53 of them had metastatic complications as revealed clinically, roentgenographically and/or at necropsy. Identical procedures of irradiation caused pulmonary fibrosis in only 9 patients who were clinically free from cancer from three to ten years. This is the approximate incidence of irradiation fibrosis for so-called normal lungs. Roentgen determination of irradiation fibrosis complicating and accentuating metastatic cancer or other possible pathologic factors (infection, arteriosclerosis and advancing age) are fraught with many complexities and inconsistencies; so interpretations and conclusions may be controversial. Standards of evaluation are only approximate estimations.

Carcinoma of Lower Lip.—Howes and La Rosa report 74 cases of cancer of the lower lip treated at the Brooklyn Cancer Institute between 1930 and 1940. Only 1 patient was a woman. The youngest patient was 32, and the oldest had passed his eighty-sixth year; the average age for the series was 62. Treatment for 59 of the patients had a satisfactory result, and that of 15 was a failure. The result was deemed satisfactory if after six months there was no evidence of extension. Three patients have died of intercurrent disease—heart disease, tuberculosis and the like—but with no evidence of recurrence or spread of the carcinoma. The result was considered a failure if local or metastatic spread of the cancer occurred. Of the other 8 patients who died in the (failure) series it is known that further extension to the submental or the submaxillary region of the cervical lymphatics developed before death. Many of these had carcinoma and osteomyelitis in the mandible. Surgical intervention and radium or roentgen therapy to the local lesion were equally efficient in producing a cure. If the local lesion is controlled, block dissection of the cervical lymphatics offers the greatest hope of cure.

Irradiation Sickness.—The various remedies that Steinberg used for alleviating irradiation sickness included slow irradiation technic, administration of liver extract or of vitamin B₁, screening and high sodium chloride intake. An analysis of 103 consecutive instances of irradiation sickness, based on the development of lassitude (for which 15 per cent is subtracted from the effectiveness of the drug or physical means), nausea (15 per cent subtracted), anorexia (15 per cent), vomiting (25 per cent) and exhaustion (30 per cent), shows that the slow technic (200 roentgens or less being given daily) was 82 per cent effective, therapy with sodium chloride (10 Gm. daily) 77 per cent, oral administration of liver extract 70 per cent, intramuscular administration of liver extract 51 per cent, vitamin B₁ therapy 44 per cent and screening had no effect. None of the methods appear specific; most of them are beneficial either through improvement of the general condition of the patient or through the psychic effect resulting from the added attention that the patient receives. In the recommendation of drugs or any other means for combating irradiation sickness one should take into consideration the condition of the patient, the area or site to be irradiated, the size of the ports, the number of roentgens given daily, the ratio of the scheduled to the total dose and the fact that irradiation sickness does not develop in many cases even though large daily and total doses are given.

Surveys of Chest.—Richards states that the roentgen examination of recruits for military service not only excludes carriers of the tubercle bacillus but obviates the breakdown of enlisted men in whom pulmonary lesions are unsuspected and protects the country from enormous hospitalization and pension expense. In Canada the 14 by 17 inch (35.5 by 43 cm.) film was accepted largely because of its almost universal availability. At first civilian roentgenologists donated their services, to whom \$2 was paid for the film, its development and the filing envelop. In Ontario it has been calculated that the approximate cost to find each case of tuberculosis was \$500. After that it costs the province approximately \$1,000 to treat each patient with minimal, \$3,000 for each with moderately advanced and \$5,000 for each with advanced tuberculosis. But in the case of a soldier in whom tuberculosis develops the expense is \$25,000. This includes his hospitalization, as for the civilian, his life pension and usually a living allowance for his wife and family. The author believes that nontuberculous pulmonary infection has received far too little attention. In the army nontuberculous infection can be as crippling as tuberculosis, and the hospitalization and pension cost is four to six times that for tuberculosis. Figures from the director general's office indicate that during the recruitment of 328,325 men the single 14 by 17 inch roentgenogram was responsible for the rejection of 5,273; 3,076 had tuberculous and 1,088 nontuberculous pulmonary disease, and the rest had cardiac or other conditions. There were eleven "personal" errors due to interpretation, and sixteen other errors were inherent in the method and unavoidable. Even if other errors are discovered later the single 14 by 17 inch roentgenogram has proved extremely accurate, and it is amply justified on economic grounds. Guided by the statistics of the last war, the investment of some \$600,000 for the roentgen survey has

resulted in a saving to the country of more than \$20,000,000. In one unit of 800 men, of which the author has knowledge, 20 had open tuberculosis. The roentgen examination of these men cost the country \$1,600 and might be said to have saved \$80,000 to \$100,000. The potential saving is far greater when the possibility of the infection of others is considered. Up to the end of May 1941, 895 men were discharged from the Canadian army because of pulmonary tuberculosis. Most of them were recruited before a roentgen survey of the chest was done as a routine.

American Review of Tuberculosis, New York

45:1-116 (Jan.) 1942

- *Fluoroscopic in Diagnosis of Pulmonary Tuberculosis. L. H. Garland, San Francisco.—p. 1.
- *Roentgenoscopy of Lungs: Its Adequacy as Determined by Spot Roentgenography. R. H. Stiehm, Madison, Wis.—p. 15.
- Tuberculosis Control Program in Mexico. D. G. Alarcón, Mexico, D. F., Mexico.—p. 36.
- Tuberculosis Control Among North American Indians. J. G. Townsend, Washington, D. C.; J. D. Aronson, Philadelphia; R. Saylor and Irma Parr.—p. 41.
- Tuberculosis in the Negro. V. F. Cullen, Frederick, Md., and R. Hoffman, Henryton, Md.—p. 53.
- *Mortality from Tuberculosis Among Race Stocks in the Southwest. L. I. Dublin, New York.—p. 61.
- Solitary Foci of Tuberculosis: Their Development and Progress—Assmann Foci, Caseous Nodular Tuberculosis and Tuberculomas. P. H. Pierson, San Francisco.—p. 75.

Fluoroscopy.—Garland states that even the published data of ardent protagonists of fluoroscopy show that the relative accuracy of the method in diagnosing tuberculosis is much lower than is indicated by the conclusions of these authors. Physical, psychologic and personal factors make fluoroscopy not sufficiently accurate for detecting active tuberculous lesions. The method is much more accurate than simple physical examination and is of definite value for detecting extensive or moderately advanced disease, especially when cavities are present. The percentage error of even expert fluoroscopy as compared to roentgenography varies from 13 to 35 per cent. Fluoroscopy in selected cases is essentially an adjunct to complete roentgen examination.

Roentgenoscopy of Lungs.—Stiehm presents cases which illustrate the advantages of roentgenoscopy: the proper position, the viewing of the lungs in several positions, which may disclose lesions at the periphery of the lung and those hidden by bones or other structures, and the advantage of magnifying a small lesion. The limitations of even the 14 by 17 inch stereoscopic film are revealed by roentgenoscopy. The tendency for relying on the posteroanterior roentgenogram, whether the miniature or the 14 by 17 inch, should be viewed with more caution and less enthusiasm. The miniature photograph is perhaps economically justifiable, but its limitations must be widely appreciated, especially if the small infiltrating lesion is to be found. Enlargement of the image, by magnification by roentgenoscopy and spot roentgenography, rather than its reduction appears more tenable. It is unfortunate that a tendency has developed to omit the tuberculin test, the earliest indication of tubercle formation, when mass roentgen surveys are made. Tuberculin tests should be repeated at yearly or more frequent intervals on all persons who react negatively to the test. With this routine the approximate time at which the infection occurred is known. The low cost of miniature films does not make the tuberculin test less valuable. It is not good medical practice to carry out mass roentgen ray surveys without knowing which persons are infected. The attempt to designate by a study of the roentgenogram which lesions typify significant pulmonary tuberculosis and/or arrested disease is hazardous and unfortunate and leads to errors of diagnosis. The minuteness of a tuberculous lesion does not indicate benignity. A study which includes history, physical examination and roentgenographic and laboratory data should not be considered complete unless the fasting patient's gastric contents are aspirated on three successive mornings and guinea pigs are inoculated. The presence of tubercle bacilli as determined by guinea pig inoculation indicates, with few exceptions, that the lesion seen in the roentgenogram is tuberculous and pathologically active.

Tuberculosis in the Southwest.—Dublin discusses the mortality in the racial groups (Negro, Mexican, Indian, Chinese, Japanese and Filipino) in the Southwest. In Louisiana the death rate from tuberculosis among Negroes for 1937 to 1939 was 102.5 per hundred thousand, in Texas 92.2 and in California 201.9, as compared to 38, 50.5 and less than 50, respectively, for the white population. The problem of tuberculosis among Mexicans is largely concentrated in Texas, New Mexico, Arizona and California. Data furnished by Texas authorities show that in 1937 to 1939 the death rate from tuberculosis in the Mexican population was 117.9. Data on the Spanish-American population in New Mexico are most unsatisfactory, for the certification of the cause of death is not efficient and in approximately 20 per cent of cases the cause of death is not stated or is ill defined. Werner found that deaths from tuberculosis among Mexicans in New Mexico accounted for more than two thirds of the total deaths in the state from this cause. In Arizona the death rate among Mexicans for 1937 to 1939, as reported by the state officials, was 145.8. In California the rate reported by the state officials was 199.9. The Indian population of Arizona, New Mexico and California is approximately 100,000, or 30 per cent of the total Indian population of the country. Arizona reports a death rate from tuberculosis among Indians of 280.5, New Mexico a rate of 200 and California a rate of 237.6. The death rate from tuberculosis among the Indians of Oklahoma, who make up about 30 per cent of the total Indian population of the country, for 1937 to 1939 was 154. The Japanese comprise nearly two thirds of the 200,000 persons of Oriental origin in California. The death rate from tuberculosis for the Japanese for 1937 to 1939 was 83.8, for the Chinese it was 179.8 and for the Filipinos it was 223.6 per hundred thousand. No permanent solution of the tuberculosis problem in the Southwest may be expected until the economic condition of the racial groups mentioned is improved and the diagnostic and curative facilities are expanded.

Annals of Surgery, Philadelphia

115:1-160 (Jan.) 1942

- Primary, Solitary Lymphoid Tumors of Gastrointestinal Tract. S. Warren and C. R. Lulenski, Boston.—p. 1.
- Rupture of Colon by Compressed Air: Report of Three Cases. R. K. Brown, Buffalo, and J. H. Dwinelle, Auburn, N. Y.—p. 13.
- *Congenital Malformations of Appendix—Familial Disease. T. M. Downs, Bryn Mawr, Pa.—p. 21.
- Obstructive Jaundice Due to Carcinoma of Pancreas: Choice of Operative Procedure. M. A. Sallick and J. H. Garlock, New York.—p. 25.
- Heus Following Fractured Ribs. W. A. Altmeier, Cincinnati, and G. H. Wadsworth, Detroit.—p. 32.
- Effect of Sulfonamides on Prevention of Experimental Brain Abscess. G. M. Markley, Philadelphia.—p. 39.
- *Relation of Hyperthyroidism to Hypertension. J. D. Bisgard, Omaha.—p. 42.
- Metastatic Tumors in Breast. H. Charache, Brooklyn.—p. 47.
- Neoplasms of Bony Thoracic Wall. G. N. J. Sommer Jr., Trenton, N. J., and R. C. Major, Atlanta, Ga.—p. 51.
- *Autoplastic Transplantation of Splenic Tissue, in Man, Following Traumatic Rupture of Spleen. R. A. Hanrick, Birmingham, Ala., and J. D. Bush, University, Ala.—p. 84.
- *Unusual Case of Benign Multiple Chorionic Villi Implants in Peritoneal Cavity Accompanied by Hemoperitoneum. J. A. Lazarus and A. Schifrin, New York.—p. 93.
- *Krukenberg's Tumors: Survey of Forty-Four Cases. J. M. Lefell Jr., J. C. Masson and M. B. Dockerty, Rochester, Minn.—p. 102.
- Desmoid Tumors: Clinical and Pathologic Study. R. O. Pearman and C. W. Mayo, Rochester, Minn.—p. 114.
- Technic of Tattooing with Mercury Sulfide for Pruritus Ani. R. Turrell, New York, and A. W. M. Marino, Brooklyn.—p. 126.
- Varicose Veins: Analysis of Results of Various Operative Procedures. S. W. Moore and G. M. Knapp, New York.—p. 131.
- Problem of Catgut Sensitivity and Its Relation to Wound Healing: Preliminary Report. H. T. Langston, Chicago.—p. 141.
- Role of Liver in Preoperative Care. J. H. Mulholland, New York.—p. 148.
- Advantages of Combining Local Infiltration Anesthesia with Controlled Fractional Spinal Anesthesia in Substandard Surgical Risks. J. Rhoads and W. E. Lee, Philadelphia.—p. 156.

Familial Malformation of Appendix.—Downs reviewed histories of a family of 22 persons, descendants of 1 man to the third generation, on 16 of whom appendectomy had been performed. The same deformity has been observed in the excised appendix of each person. The family studied consists of a father, his 6 children and 15 grandchildren. The father, 4 of his 6 children and 11 of the grandchildren have been operated on. The operations were performed in various hospitals. The record

of each mentions a band of fibrous tissue at the base of the appendix with adhesion of the organ to the outer surface of the cecum. Strikingly good results followed the removal of the mechanically crippled appendix. The peritoneal bands may be inherited. The earliest symptoms of indigestion, abdominal pain, tenderness at McBurney's point and colic are probably due to a deranged intestinal function, such as pylorospasm or spastic colon, without organic changes in the appendical wall. The malformation alone is not sufficient to precipitate an attack of acute appendicitis. It may act as a predisposing cause, but some other etiologic factor must be present.

Hyperthyroidism and Hypertension.—Bisgard studied the blood pressure of 48 of 99 patients one year or more after a subtotal thyroidectomy, 32 of whom at the time of operation had a resting systolic pressure between 145 and 170 and the other 16 a pressure of 170 or more. The pressure of 19 of the first group one year or more after the operation was reduced considerably; the systolic pressure of 11 of these 19 was normal. The diastolic pressure of 17 and the systolic pressure of 5 decreased, and in 10 the diastolic pressure increased. In 2 there was no change in pressure. In 8 of the second group, both the systolic and the diastolic pressure after thyroidectomy were reduced and remained so for one to five years. In 4 of these the pressure was nearly normal. In 4 of the 8 remaining patients the pressure was increased, in 2 it remained the same and in 2 the decrease was extreme. From these data two types of cases are distinguishable: (1) a type in which hyperthyroidism and established hypertension coexist as unrelated entities and (2) a type in which the relief of the hyperthyroidism by subtotal thyroidectomy causes the systolic and the diastolic pressure to become much lower, normal or nearly normal. The relation of hyperthyroidism to hypertension in the second type of case is probably provocative; the hyperthyroidism merely precipitates or exaggerates the latent hypertension. In both types arteriolar disease, differing only in degree, is present. In the first type the arteriolar disease is more advanced and renders the vascular bed inadequate for even a normal volume of blood flow, and in the second type the hypertension is pre-tensive and in time progresses to the condition of the first type.

Autoplastic Splenic Implants.—Hamrick and Bush report the development of nodular splenic implants throughout the peritoneal cavity in a Negro boy of 9 after traumatic rupture of the spleen. The boy had fallen out of a tree and had struck his abdomen on the ground. This is the thirteenth case of similar nature described in medical literature. It is the author's opinion that in man the relative youthfulness of the splenic tissue is of prime importance in making the splenic pulp cells viable for autoplastic implantation and successful peritoneal grafting. Autoplastic transplantation of splenic tissue may not be the exception in persons who have survived trauma to the spleen incurred in their youth.

Chorionic Villi Implants.—Lazarus and Schiffrin cite the case of a woman of 25 who two years before admission had gone through an apparently normal pregnancy but had given birth to a dead fetus. Three months prior to her present illness she was free of abnormal symptoms, when vague abdominal pain ensued. Slightly less than four weeks before operation she was curetted for a supposed intrauterine pregnancy, having missed one menstruation. The abdominal pain became acute only twenty-four hours before operation. Operation revealed much blood and many clots in the peritoneal cavity. The tubes and ovaries, particularly the right, were studded with small nodules but presented no rent indicative of ectopic rupture. A section of omentum studied microscopically disclosed the tumors to be typical chorionic villi, different from chorioepithelioma. The benignity of the lesion was suggested by the fact that four Aschheim-Zondek tests gave negative results. Photomicrographs of the tumor disclose well differentiated villi which are not commonly present in chorioepithelioma but which characterize normal chorionic tissue. Furthermore, the cells were typical Langhans' syncytial cells. Also there was little evidence of invasion of the blood spaces by chorionic tissue, which is frequent in the malignant type of tumor. Study of the literature has failed to reveal a similar instance.

Krukenberg's Tumor.—From a review of the surgical, necropsy and clinical data on 44 patients with Krukenberg's tumor encountered at the Mayo Clinic from 1908 to 1938, Leffell and his colleagues conclude that the term should not be used. Since, however, this is likely to be employed, they suggest that all metastatic adenocarcinomas of the ovary be included under it. These tumors vary only in size and degree of malignant grade. Nearly all Krukenberg tumors will show some glandular structure if serial sections are made. The authors have always found mucus, evidenced by the presence of "signet ring" cells. The variation in glandular structure and mucus is largely dependent on the grade of the primary lesion. Metastasis may occur by spread through peritoneal lymphatic channels, by the retroperitoneal lymphatics, by infiltration of contiguous structures or by a process of peritoneal sedimentation. The predominant type of spread depends on the site of the primary lesion, the depth to which the wall of the primarily involved viscus has been invaded and the degree or grade of the primary lesion. Primary adeno-"colloid" carcinoma of the ovary rarely mimics Krukenberg's tumor. The stromal reaction seen in an ovary being invaded by carcinoma is comparatively typical. As for carcinoma elsewhere in the body, operation for a Krukenberg tumor perhaps offers more than does any other type of treatment. Although the surgeon is confronted with a hopeless situation, he must realize the value of palliation.

Archives of Dermatology and Syphilology, Chicago 45:1-258 (Jan.) 1942

- *Hereditary Xanthomatosis: Familial Incidence of Xanthoma Tuberosum Associated with Hypercholesterolemia and Cardiovascular Involvement, with Report of Several Cases of Sudden Death. D. Bloom, New York; S. R. Kaufman and R. A. Stevens, Wilkes-Barre, Pa.—p. 1.
- Chromoblastomycosis in Cuba. V. Pardo-Castello, Havana, Cuba; E. R. Leon, Santa Clara, Cuba, and F. Trespalacios, Havana, Cuba.—p. 19.
- Lupus Erythematosus Hypertrophicus et Profundus. P. E. Beehet, New York.—p. 33.
- Necrobiosis Lipoidica and Granuloma Annulare: Comparative Study. F. A. Ellis, Baltimore, and H. Kirby-Smith, Washington, D. C.—p. 40.
- Bacterial Flora of Normal Skin: Report on Effect on Various Ointments and Solutions, with Comments on Clinical Significance of This Study. D. M. Pillsbury, C. S. Livingood and Anna C. Nichols, Philadelphia.—p. 61.
- Differential Diagnosis of Parapsoriasis. L. McCarthy, Washington, D. C.—p. 81.
- Histochemical Observations on Melanin Production in Skin. H. Sharlit, in collaboration with W. Sachs, C. F. Sims and Bella H. Salzer, New York.—p. 103.
- Comparison of Frei Antigens. H. M. Robinson and H. M. Robinson Jr., Baltimore.—p. 112.
- *Estrogen Therapy of Thinea Capitis: Preliminary Report. D. O. Poth and S. R. Kaliski, San Antonio, Texas.—p. 121.
- Dyskeratoid Dermatitis. S. B. Frank and C. R. Rein, New York.—p. 129.

Hereditary Xanthomatosis.—Bloom and his co-workers discuss hereditary xanthomatosis as it occurred in 9 children of Syrian descent whose parents were second cousins. There had been 13 children; 4 are excluded from the survey, as 1 of them was still an infant and 3 had died at birth or shortly after. In 5 of the 9 remaining children xanthoma tuberosum developed before the age of 4. Of these 4 died more or less suddenly at the ages of 6½, 14, 18 and 23 years, respectively. The 1 surviving boy with xanthoma tuberosum has a cardiac defect and hypercholesterolemia. Of the 4 living children without cutaneous xanthoma a girl aged 8 years has heart disease and hypercholesterolemia, a boy of 4½ has hypercholesterolemia without any cutaneous or cardiac involvement and 2 children are apparently free of any abnormality. The parents of these tainted siblings had no cutaneous or cardiovascular symptoms, although the father had hypercholesterolemia. The mother had 8 half siblings, and 5 of them also had hypercholesterolemia. This appears to support the theory that hypercholesterolemia rather than xanthoma tuberosum is the principal directly inherited factor and that this disturbance of lipid metabolism under certain conditions leads to cutaneous and cardiovascular changes. The hereditary cause of the disorder has been demonstrated but no adequate statistical data are available that warrant a final analysis of the genetic mechanism involved. The taint distribution agrees with the theory of dominant inheritance, but it also can be explained by simple recessiveness. Genetic studies of affected families are essential for the development of successful therapeutic and preventive measures. A cholesterol-

free and fat-free diet may be helpful in protecting carriers of the hypercholesteremic trait against the development of cutaneous and cardiovascular lesions.

Estrogen for Tinea Capitis.—Poth and Kaliski successfully treated 18 boys and 12 girls having tinea capitis with diethylstilbestrol and theelin. There was no significant difference in the healing time and tolerance for the two preparations. The mechanism of the action of the estrogens is not known. It may be due to the temporary production of adult cells. This might explain the tendency for the spontaneous cure of tinea capitis at puberty. If estrogen causes changes in the scalp which increase its local resistance, its effectiveness might be increased by the concerted use of fungicides.

Archives of Ophthalmology, Chicago

27:1-230 (Jan.) 1942

- Ocular Signs of Intracranial Saccular Aneurysms: Experimental Work on Collateral Circulation Through Ophthalmic Artery. F. B. Walsh and A. B. King, Baltimore.—p. 1.
Corneal Penetration of Sulfanilamide and Some of Its Derivatives. H. Chinn and J. G. Bellows, Chicago.—p. 34.
Treatment of Retinoblastoma (Retinal Glioma) Surgically and by Irradiation. H. Martin and A. B. Reese, New York.—p. 40.
Studies of Retina in Bulk: Some Observations on Unstained Human Retina. A. Loewenstein, Glasgow, Scotland.—p. 73.
Epidemiology of Inclusion Conjunctivitis. P. Thygeson and W. Stone Jr., New York.—p. 91.
Choroiditis Centralis Serosa: Diagnosis, Pathologic Physiology and Therapy. W. F. Duggan, Utica, N. Y.—p. 123.
*Hereditary Glaucoma in Pedigree of Three Generations. T. D. Allen and W. G. Ackerman, Chicago.—p. 139.
Operative Treatment of Congenital Subluxation of Lens. A. Knapp, New York.—p. 158.
Etiology of Dacryocystitis and Epiphora. S. W. Garfin, Boston.—p. 167.

Hereditary Glaucoma.—Allen and Ackerman report 7 instances of hereditary glaucoma observed among 15 members of a family in which consanguine persons had not married and which was traced through three generations. The average age at which the glaucoma ensued was 11.6 years. The disorder was of the chronic simple type. Two of the 4 patients whose error of refraction could be determined had myopia; in 1 this was of more than 5 diopters in each eye, and in the other 1 the myopia varied from 1 to 5 diopters in the right eye. Miotics were insufficient; the best results were obtained with medical and surgical therapy. Early operation, goniotomy, before extensive visual damage occurs is important. Peripheral anterior synechias are unlikely unless considerable hemorrhage follows the operation. In the authors' cases goniotomy was effective without repetition in four eyes and apparently effective with one repetition in three eyes, and in one eye five goniotomies, two cyclodialyses and one deep root iridectomy were ineffective but iridencleisis was successful.

Archives of Otolaryngology, Chicago

35:1-182 (Jan.) 1942

- Diagnosis and Treatment of Cancer of Larynx, with Statistical Review of Fifteen Cases. A. E. Hammond, Detroit.—p. 1.
Carotid Artery Surgery. R. W. Kerwin, Chicago.—p. 30.
*Otitic Bacterial Meningitis. S. Weinstein, Brooklyn.—p. 53.
Sphenopalatine Ganglion Neuralgia. W. W. Eagle, Durham, N. C.—p. 66.
Malignant Melanoma of Nose. I. I. Kaplan, New York.—p. 85.
*Relation of Tonsillectomy to Poliomyelitis. E. M. Seydell, Wichita, Kan.—p. 91.
*Aeroinusitis. P. A. Campbell, Randolph Field, Texas.—p. 107.
Purulent Otitis Media, Mastoiditis, Sinus Thrombosis and Suppuration of Petrous Pyramid. S. J. Kopetzky, New York.—p. 115.

Otitic Bacterial Meningitis.—Weinstein discusses 39 cases of otitic bacterial meningitis with bacteria demonstrable in the spinal fluid encountered at the Jewish Hospital in the four years before the introduction of chemotherapy and in the four years afterward. The meningitis was usually associated with acute otitis, and generally the right side was involved. The otitis was acute in 34 and chronic in 5. The organisms most commonly isolated were streptococci and pneumococci. During the four years prior to 1937, 27 patients were encountered and not 1 recovered, but 4 of the 12 patients treated since 1937 have recovered. Modern chemotherapy for bacterial meningitis is one of the major achievements in its treatment, making the outlook for the future brighter.

Tonsillectomy and Poliomyelitis.—Seydell studied the relation of tonsillectomy to the development of poliomyelitis

(bulbar) as afforded by a survey of literature and various public health statistics. Definite conclusions cannot be drawn, as the data studied either support or oppose the theory that persons tonsillectomized during an epidemic of poliomyelitis are more prone to the disease or suggest that those whose tonsils have been removed are more susceptible to poliomyelitis irrespective of the time of the operation. The available statistics show that the bulbar form of the disease in 48 and the spinal form in 25 patients followed a recent tonsillectomy. The relationship of tonsillectomy to poliomyelitis cannot be determined without further study. Definite plans for the investigation of all epidemics of poliomyelitis should be formulated by trained epidemiologists, and an investigator should be appointed for each state. After an epidemic, statistics would thus become available through the various state boards of health.

Aeroinusitis.—Campbell states that in certain situations the paranasal sinuses are affected by changes in barometric pressure produced by changes in elevation and in weather. Normal paranasal sinuses surrounded by normal tissues are unaffected by these variations, but the presence of fluid in the sinuses or of redundant tissue in contact with the ostium of a sinus creates mechanical conditions which may lead to pathologic changes and symptoms. The term aeroinusitis is suggested for the condition.

Michigan State Medical Society Journal, Muskegon

41:1-84 (Jan.) 1942

- Choice of Anesthesia in Emergency Surgery. W. Bourne, Montreal, Canada.—p. 35.
Modification of Open Mask for Administration of Vinethene Anesthesia. C. Odén, Muskegon.—p. 39.
Coarctation of Aorta: Case with Right Axis Deviation of Electrocardiogram and Auricular Fibrillation, with Some Statistics. H. Stalker, Detroit.—p. 40.
The Physician in National Defense. R. A. Bier, Washington, D. C.—p. 43.
Dangers in Breech Delivery. W. F. Seeley and R. S. Siddall, Detroit.—p. 49.
A Psychiatrist Looks at Education. L. A. Schwartz, Detroit.—p. 52.
Chemotherapy in Acute Hematogenous Osteomyelitis: Case Report. B. J. Fieldhouse, Ida.—p. 56.

New England Journal of Medicine, Boston

225:995-1034 (Dec. 25) 1941

- Cardiovascular Examination of the Army Recruit. H. Jackson Jr., Boston.—p. 995.
New Physical Standards for Army Pilots. E. T. Spunt, Boston.—p. 999.
*Arterial Occlusion in Relation to Effort, with Special Reference to Retinal Arteries. H. B. Sprague and W. Westinghouse, Boston.—p. 1002.
Tuberculin Tests in Children: Interpretation of Series of Varying Intradermal Test Doses and of Comparable Series of Patch Tests. C. A. Smith, W. H. Faulkner and J. M. Cordi, Boston.—p. 1008.
*Encephalitis of Virus Etiology. J. H. Dingle, Boston.—p. 1014.

Arterial Occlusion and Effort.—Sprague and Westinghouse determined the exact effort that 75 patients in presumably good health were undergoing at the time of their arterial occlusion; 29 patients (with thirty attacks) had ocular symptoms and 46 (with forty-seven occlusions) did not have symptoms referable to the eye. The retinal picture of arterial blocking is that of ischemia, often with the characteristic cherry red spot at the macula. Although embolism of the central artery of the retina is a popular diagnosis, such embolism is relatively rare; obliterating endarteritis with thrombosis is the common cause. Fifteen of the 29 patients with occlusion of the retinal artery or its branches had rheumatic heart disease. Loss of sight of the right eye in 10 and of the left in 4 was sudden. In 1 the right retinal artery was occluded first and then the left. Only 2 of the patients were undergoing unusual physical effort when overtaken by blindness, 6 were engaged in mild exercise and 7 were at complete rest. There were 9 instances of hypertension and arteriosclerosis. The right eye of 5 and the left eye of 4 were involved. Two patients were doing household work, 1 stepped back from a slight furnace explosion, 1 was bending forward working on an automobile, 2 were dressing, 1 awoke with loss of vision, 1 was at the movies and 1 noticed loss of vision after turning his head quickly. Two of the remaining 5 patients had syphilis (both had a normal cardiac rhythm), and in 3 no cardiovascular disease was observed. One of the 2 patients with syphilis was ironing and 1 was walking about the house at the time of occlusion, 2 of the

others were at rest and 1 was walking. Of the 46 patients in whom the occlusion was not in the vessels of the eye 22 had rheumatic heart disease, and in none of them did the embolism occur during violent effort. In 2 it happened some time after unusual effort or 15 minutes after running for a trolley and in 1 after the patient had fixed a bed. In 9 others it occurred during mild effort (rising in the morning, driving a car, eating breakfast, playing golf and working as a baker) and in 11 during complete rest. Arteriosclerosis and/or hypertension was present in 23 patients, and 1 patient had no demonstrable cardiovascular disease. None of these patients were engaged in severe or unusual effort; in fact, 12 were at complete rest. It is seen that the sudden loss of sight or of the use of a limb or occlusion of cerebral or mesenteric vessels based on embolism or other arterial blockage occurred during ordinary daytime activities or when the patient was at rest in more than 9 of 10 patients. Unusual effort apparently is not the cause of arterial occlusion. Arterial blockage is as progressive when the patient is at rest as when he is active, perhaps more so.

Encephalitis.—Dingle states that the largest epidemic of encephalitis, affecting approximately 3,000 persons, of known origin occurred during the past summer and fall in an area encompassing the North Central states and Canadian provinces. In the outbreaks of von Economo's disease of unknown origin since 1916 three distinct viruses have been demonstrated. This has helped to clarify the problem of encephalitis. Only two types of virus encephalitis, St. Louis encephalitis and equine encephalomyelitis, other than poliomyelitis, have occurred in significant epidemics in this country. For only poliomyelitis and Australian X disease is evidence of potential animal reservoirs lacking, and vector transmission is possible for at least five of the viruses causing encephalitis in man. The acute encephalitis of virus origin that occur in epidemic form are so similar in their clinical aspects that differentiation on this basis is not possible except in poliomyelitis. The final etiologic diagnosis must be made with the aid of laboratory procedures. Treatment of all the encephalitis is at present chiefly symptomatic. The sulfonamide derivatives, specific antiserum, convalescent human serum, antistreptococcus serum and streptococcus vaccines have been tried for therapy and/or prophylaxis. In this country there are three methods of preventing epidemics of encephalitis: extermination of host reservoirs, extermination of vectors and immunization of susceptible hosts. The use of purified immune vaccine seems desirable for laboratory workers and for persons in areas where equine encephalomyelitis is endemic whose occupation offers frequent opportunity for infection with the virus. Vaccines that can be used safely in man are not yet available. Further investigation of the problems of prevention is essential, especially because of the military activities and concentration of men in training camps in areas where the disease is endemic.

North Carolina Medical Journal, Winston-Salem

2:635-690 (Dec) 1941

- How Can I Prepare My Child for the Future? J. A. Shaw, Fayetteville—p. 635
Acute Glomerulonephritis with Special Reference to Treatment W. R. Stanford, Durham—p. 637
Care of Patients with Incurable Cancer of Cervix J. P. Rousseau, Winston-Salem—p. 644
Management of Congestive Heart Failure W. T. Ruess, Fayetteville—p. 645
True Hyperinsulinism Due to Diffuse Hyperplasia of Islet Tissue: Report of Case Cured by Subtotal Pancreatectomy A. deT. Vahl and E. A. McWilliam, Winston-Salem—p. 648
Chemotherapy in Obstetrics and Gynecology C. N. Burton, Asheville—p. 652
Aspiration of Lipiodol Injected for Diagnosis and Localization of Ruptured Intervertebral Disks B. Woodhall, Durham—p. 655
Is Diverticulitis of Colon a Surgical Disease? W. R. Johnson, Asheville—p. 657
Rheumatic Fever F. M. Carr, Asheville—p. 661
Evaluation of Routine Proctosigmoidoscopy in Gastrointestinal Study: Report on 79 Examinations A. N. Rossien, New Gardens, N. C.—p. 666

Care of Patients with Incurable Cancer of Cervix.—Rousseau recommends the following twelve measures for relieving the pain of incurable cervical cancer: 1. The neurability

and hopelessness of the disease should be appraised correctly. 2. Ureteral obstruction, anuria and uremia should be prevented. 3. Pyometra should be prevented by gentle dilation of the cervix and lavage of the uterine cavity. 4. If a parametric abscess exists, colpotomy is indicated. 5. The urinary symptoms incident to involvement of the wall of the bladder and associated cystitis should be relieved. 6. High voltage roentgen therapy is necessary for painful osseous metastasis. 7. When sedation becomes necessary, acetylsalicylic acid, then codeine, cobra venom and finally morphine should be used. 8. Alcohol should be injected into the spinal subarachnoid space if sedation fails to give relief. 9. Treatment with a liquid diet and tincture of opium should be tried for proctitis, diarrhea and rectal tenesmus. 10. For the relief of the toxemia of severe infections, chills and fever the sulfonamides, blood transfusion, intravenous injections of fluid and frequent hot boric acid douches are helpful. 11. A vaginal tamponade with gauze soaked in liquid petrolatum will control severe hemorrhages. 12. For the ileus of the late stages of the disease a low residue diet, liquid petrolatum and enemas are indicated.

Northwest Medicine, Seattle

41:1-38 (Jan) 1942

- Nature of Allergy: Its Pathology and Mechanisms of Symptom Production M. B. Cohen, Cleveland—p. 5
Clinical Physiology of Shock K. E. Hynes, Seattle—p. 7
Organic Occlusive Peripheral Vascular Diseases: Diagnosis and Treatment R. J. Popkin, McChord Field, Wash.—p. 10
Pulmonary Emboli: Report of Fatal Medical Case J. M. Bowers, Seattle—p. 14
Medical Aspects of Industrial Poisons H. M. F. Behrman, San Francisco—p. 20
Compound Fractures H. C. Blair, Portland, Ore.—p. 23
Differential Diagnosis Between Hyperthyroidism and Neurosis T. Lemere and B. T. King, Seattle—p. 26
Pseudomucinous Cystadenoma with Malignant Changes R. S. Mitchell, Wenatchee, Wash.—p. 27

Pennsylvania Medical Journal, Harrisburg

45:321-416 (Jan) 1942

- Changing Conceptions of Portal Cirrhosis A. M. Snell, Rochester, Minn.—p. 337
Early Recognition of Deafness: Pennsylvania Plan for the Hard of Hearing School Child L. T. Buckman, Wilkes-Barre—p. 345
Report of Experiment in Control of Cancer of Uterus Catharine Macfarlane, Margaret C. Sturges and Faith S. Fetterman, Philadelphia—p. 348
Sedatives—Their Use and Abuse E. B. Edie, Uniontown—p. 351
Treatment of Acute Otitis Media in Children J. W. Herschberger, Martinsburg—p. 355
*Acute Appendicitis in Children J. M. Deaver, Philadelphia—p. 358
*Male Hormone Therapy C. W. Dunn, Philadelphia—p. 362

Acute Appendicitis in Children.—Deaver presents a study of 417 consecutive cases of acute (perforated, nonperforated and perforated with abscess or with peritonitis) appendicitis in children up to 14 years of age who were admitted between 1930 and August 1941 to the Children's Hospital of the Mary J. Drexel Home. Analysis of the data reveals that there was a steady decrease in mortality (11 of the 119 children with a perforated appendix died) during the period of the study. There were no deaths among the 298 children whose appendix was not perforated. The decreased mortality is attributed to proper preoperative care, increased use of the McBurney incision and intelligent postoperative care, which stressed proper fluid electrolyte administration and duodenal suction. Sulfanilamide has been used for the last two years; 1 to 2 Gm. was placed in the peritoneal cavity and 1 to 2 Gm. in the wound. The dose depended on the amount of contamination, the size of the incision and the size and age of the child. When drainage was employed, sulfanilamide was administered by hypodermoclysis for the first three days. The drug has not been harmful. Its intraperitoneal use may be beneficial for early peritonitis. Its use in the wound has cut down minor complications of the wound when drainage was not used and permitted incisions to be closed more tightly when drains were used.

Androgen Therapy.—Dunn reviews the use of androgen therapy for the young hypogonadal male, the climacteric male and the impotent male. The most effective and practical method of administering testosterone for genital hypoplasia is by implantation in the adult male and by oral or hypodermic administration for the puberal or the adolescent male. Patients given an adequate amount of testosterone exhibit definite

primary and secondary sex characteristics and favorable constitutional effects. Testosterone stimulates and sometimes accelerates growth. The least favorable results are obtained when impotence develops after diabetes or testicular atrophy. It is possible to induce testicular development when 200 to 300 mg of testosterone is implanted at intervals of four to six months. The administration of testosterone to patients with diabetes resulted in a diminished requirement of insulin.

Physiological Reviews, Baltimore

22:1-124 (Jan) 1942

- Insensible Loss of Water L H Newburgh and Margaret Woodwell Johnston, Ann Arbor, Mich.—p 1
Hemoglobinuria C L Yule, Rochester N Y—p 19
Fuel for Muscular Exercise C L Gemmell Baltimore—p 32
Recent Advances in Knowledge of Liver C D Snyder, Baltimore—p 54
Present Status of Shock Problem C J Wiggers, Cleveland—p 74

Psychiatric Quarterly, Utica, N. Y.

16:1-218 (Jan) 1942

- Rorschach Method and Its Uses in Military Psychiatry J A Brussel and K S Hitch, Fort Dix N J—p 3
Comparative Table of Main Rorschach Symbols Z A Piotrowski New York—p 30
Catatonic Death Reaction Report of Case P Mihai Kings Park, N Y—p 38
Some Shakespearean Characters in Light of Present Day Psychology I S Wile New York—p 62
Alzheimer's Disease Its Incidence and Recognition W H English, Rochester, N Y—p 91
Problems of Cancer Therapy in State Hospital I Moore, Queens Village, N Y—p 107
Validity of Shipley Huttford Retent Test for 'Deterioration' B Pollack, Rochester N Y—p 119
Juvenile Amurotic Idiot G A Jarvis L Roizin and W H English, Rochester, N Y—p 132
Family Care Placement of State Hospital Patients as Method of Situational Therapy Katharina Stuber and Henrietta B De Witt, Silverville, Md—p 144
Echo of Reading Impersonal Projection in Schizophrenia Marjorie C Meehan, Newtown, Conn—p 156
Ambulatory Insulin Therapy Report of Fifty Two Cases P J Tomlinson and Lucy D Ozarin Helmut N Y—p 167
Varicella with Encephalitis S C Kurlan, Dannemora N Y—p 174
Incidence of Psychoses and Other Mental Abnormalities in Families of Recovered and Deteriorated Schizophrenic Patients O Kant, Worcester, Mass—p 176

Alzheimer's Disease—English presents evidence that supports his belief that Alzheimer's disease is more prevalent than is generally believed. The necropsy statistics at the Rochester State Hospital show about a 15 per cent incidence. Since 1935, 7 typical cases have come to necropsy. In another case a clinical diagnosis was made but permission for necropsy was not obtained. At the Rochester State Hospital at present there are 4 patients with the diagnosis of Alzheimer's disease. Inquiry into its incidence in other New York state hospitals for 1935 to 1939 inclusive revealed that Alzheimer's disease was diagnosed in 29 patients on their first admission to a state hospital. Of the 29 patients, 19 have died, necropsy of 11 was permitted in 7 of whom the diagnosis has been confirmed. It appears that in roughly one third of the cases the diagnosis is erroneous, but when it is considered that in a certain number of cases the disease is not diagnosed the erroneous diagnoses tend to be compensated for.

Quarterly J. Studies on Alcohol, New Haven, Conn

2:453-640 (Dec) 1941

- Acquired Tolerance to Ethyl Alcohol H W Newman, San Francisco—p 453
Some Cultural Factors in Etiology of Alcoholism J P Skalloo, Philadelphia—p 464
Effect of Alcohol on Mental Activity D Wechsler, New York—p 479
Marchiafava's Disease G Lolli, New Haven Conn—p 486
Alcoholism and Use of Drugs Review of 841 Cases Diagnosed 'With Psychosis Due to Drugs and Other Exogenous Toxins' or 'Without Psychosis, Drug Addiction' M Moore Alice F Raymond and Mildred G Gray, Boston—p 496
Conditioned Reflex Therapy of Chronic Alcoholism IV Preliminary Report on Value of Reinforcement W I Voeglin F Lemere, W R Broz and P O Hollaren Seattle—p 505
Critical Survey of Various Chemical Methods for Determining Alcohol Content of Body Fluids and Tissues with Their Physiologic and Medicolegal Significance W W Jetter, Boston—p 512
Vitamin Deficiencies and Liver Cirrhosis in Alcoholism Part VII Vitamin Deficiencies and Liver Cirrhosis in Alcoholism Part VII Vitamin Deficiencies and Liver Cirrhosis in Alcoholism Part VII Vitamin Deficiencies and Liver Cirrhosis in Alcoholism Part VII
Haven, Conn—p 544

Radiology, Syracuse, N. Y.

38:1-130 (Jan) 1942

- Patent Interauricular Septum Associated with Mitral Stenosis Lutembacher's Syndrome G J Baylin, Durham, N C—p 1
Clinical and Roentgen Manifestations of Carcinoma of Duodenum M Rizzo and F L Hewes, Boston—p 7
Phytobezoar and Its Formation in Vitro I K Chont, Oklahoma City—p 14
Skull Laminagraphy B S Epstein Brooklyn—p 22
Patellar Anomalies, Roentgenologic and Clinical Consideration H C Jones and D W Hedrick, Detroit—p 30
Abdominal Pregnancy D Witting and L J Menville, New Orleans—p 35
Star Shaped Radiolucencies of Gallstones Rare Roentgen Sign Marie Ortmeyer and Marie Connolly, Chicago—p 39
Relation of Density of Cholecystographic Shadows of Gallbladder to Iodine Content H Joffe and T J Wachowski, Chicago—p 43
Roentgen Diagnosis of Space Occupying Lesions in Region of Head of Pancreas R A Rendich M H Poppel and A M Cove, Brooklyn—p 47
Recovery Function of Irradiated Tissues Theoretical and Experimental Study A Mitscheller New York—p 53
Comparative Isodose Charts for 200 Kv 400 Kv and 1000 Kv X Rays M C Reinhard and H I Goltz, Buffalo—p 74
Stepless Voltage Controls for X Ray Generators A H Warner and R H Neil Los Angeles—p 77
Two Instruments for Measuring X Ray Tube Voltage M M D Williams, Rochester Minn—p 80
Tube Ratings and Exposure M M Schwarzschild, New York—p 84

Texas State Journal of Medicine, Fort Worth

37:575-638 (Jan) 1942

- Use of Radioactive Elements in Biology and Medicine W J Kerr, San Francisco—p 582
Early Degenerative Lesions of Pancreas S A Wallace and C T Ashworth Dallas—p 584
Metastatic Tumors Involving Central Nervous System H Hartman and L M Helfer, San Antonio—p 587
Acute Cervical Adentitis in Children A Seeds, Dallas—p 593
Treatment of Wounds T H Thomson Fort Worth—p 597
Disabling Injuries of Shoulder (Exclusive of Fracture and Dislocation). L P Good Texarkana—p 600
Postpartum Psychoses G W Day Fort Worth—p 605
Use of Middle Mentus in Antrum Lavage J C Dickson, Houston—p 608
Radical Mastoidectomy Indications Technique and Postoperative Management J D Singleton Dallas—p 612
Specific Problems of Morbidity and Mortality in Texas Children J M Coleman Austin—p 615

Early Degenerative Lesions of Pancreas—Wallace and Ashworth state that a careful review of sections of the pancreas from 200 recent necropsies revealed many unsuspected lesions. Adipose tissue invasion, fibrosis, arteriosclerosis and arteriolar sclerosis were observed to increase in frequency with advancing age. The evidence suggests that arteriosclerotic atrophy is probably the most frequent cause of the first two unsuspected lesions. Dilatation of acini and ducts is frequently present but has no definite relation to age.

Postpartum Psychoses—Day does not believe that the psychosis that develops during or soon after pregnancy is different from the psychosis that would develop in the person affected under any other circumstances. The psychosis developing during the pregnancy-puerperium period should receive the prompt and scientific diagnosis and treatment that the same psychosis would receive at other times. Every community ought to have a psychiatrist within consultation distance and every general hospital a psychiatric department equipped for the scientific treatment of acute psychosis.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

50:1-68 (Jan) 1942

- Problem of Human Infertility C F Fluhmann, San Francisco—p 1
Sterility as Affected by Endocrine Disturbances W M Wilson, Portland, Ore—p 6
Mechanical Factors Producing Sterility P A Reynolds Los Angeles—p 11
Cancer of Body of Uterus R L Watkins and D R Neil Portland, Ore—p 17
Practical Significance of Cancer Research I A Fmae San Francisco—p 32
Recent Advances in Pathology of Ovarian Tumors Margaret Schlee San Francisco—p 37
Dyspareunia P A Giebe, San Francisco—p 43
Hemangioma of Kidney E H McLean and T J Mathews, City, Ore—p 47

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

3:205-268 (Oct.) 1941

- Coarctation of Aorta: Collateral Circulation. C. Bramwell and A. M. Jones.—p. 205.
 *Changes in Renal Function and Persistence of Murmur After Ligation of Patent Ductus Arteriosus. G. Bourne.—p. 228.
 Inversion of T Waves in Lead 2 Caused by Variation in Position of Heart. P. D. White, F. L. Chamberlain and A. Graybiel.—p. 233.
 Pulmonary Venous Return via Superior Vena Cava. J. E. O. Gillespie.—p. 241.
 Chest Lead (CR₁) Electrocardiograms in Auricular Fibrillation. W. Evans.—p. 247.

Ligation of Ductus Arteriosus.—Bourne reports a case of patent ductus arteriosus in which ligation of the duct caused a definite increase in the diastolic pressure (associated with a decided impairment of renal function) and failed to cause the classic murmur to disappear. These two points should be further investigated, and the efficiency of the renal function of patients with the condition should be determined before and after operation.

British Journal of Ophthalmology, London

26:1-44 (Jan.) 1942

- Syphilis in Ophthalmology. E. W. Assinder.—p. 1.
 Chorioretinitis Juxtapapillaris (E. Jensen). R. G. Posthumus.—p. 23.

British Journal of Tuberculosis, London

35:125-162 (July-Oct.) 1941

- Prevention of Tuberculosis in War Time. F. Heat.—p. 127.
 Some Thoughts on Problems and Paradoxes of Primary Tuberculosis. G. A. M. Hall.—p. 133.
 Thrombosis of Superior Vena Cava and Pulmonary Veins. W. P. Cleland.—p. 141.
 Observations on Complement Fixation Test in Tuberculosis. F. Klopstock.—p. 146.

British Medical Journal, London

2:837-864 (Dec. 13) 1941

- Observations on Some Normal and Injurious Effects of Cold on Skin and Underlying Tissues: II. Chilblains and Allied Conditions. T. Lewis.—p. 837.
 *Some Effects of Vitamins B and C on Senile Patients. W. Stephenson, C. Penton and V. Korenchevsky.—p. 839.
 *Value of Blood Transfusion in Malignant Diphtheria. I. Pugh and O. S. Williams.—p. 844.
 Sacroiliac Strain. J. Cyriax.—p. 847.
 Congenital Arteriovenous Anastomosis. A. G. Watkins.—p. 849.

Effect of Vitamins B and C on Senile Patients.—Stephenson and his colleagues studied the effect of vitamins B and C on 15 old men and 25 old women. The study was carried on for a year and was controlled by giving 18 similar subjects dummy pellets of laetic sugar. The observation time was divided into five periods of eight or nine weeks, during which examinations and tests were performed repeatedly. The treatment periods were alternated with rest periods of ten to fourteen days. The post-treatment period lasted four to five months. The ages of the treated and control patients varied from 60 to 87. All the patients had some degree of senile dementia accompanied by the usual features of senility and/or those of aging. All were given a usual hospital diet not rich in vitamins. Treatment with the vitamins did not stop the biologically inevitable development of senility and did not affect the basic features of senility already present. However, the treatment prevented or improved, in some cases to a striking degree, certain senile features which could be considered pathologic, which appeared prematurely or in an extreme degree (e. g. muscular, cardiovascular and mental deterioration) or which do not seem to be inevitable in normal physiologic senility (e. g. dementia, insomnia, cutaneous rashes, itching and constipation). During the study improvement or disappearance (apparently not lasting) of some pathologic senile features was often observed, while a number of persons were not improved and in a few certain senile features developed during treatment. The results emphasize that the greatest care should be taken to prevent partial or latent vitamin deficiency, which not only may prevent certain vitamin deficiency diseases but may lengthen the approach to pathologic senility. About four

months after the treatment was terminated considerable deterioration occurred; the improvement obtained during treatment disappeared and some new instances of deterioration appeared. In spite of the relapse in some persons, in others the improvement was maintained after therapy had been withdrawn.

Blood Transfusion for Malignant Diphtheria.—Pugh and Williams gave 20 consecutive patients with malignant diphtheria transfusions of 500 cc. of stored citrated blood. There were 2 deaths among the 20 given blood transfusion and 7 deaths among 20 similar control patients. Of the 2 patients who died in the test series, 1 was moribund on admission and died a few hours after transfusion and the other died during the sixth week from cardiac failure. In the control series 5 patients died of profound toxemia during the first week of illness and 2 from cardiac failure during the second week. Immediately after the transfusion of blood the apathetic and drowsy patient had a bright and keen appearance, and the nasal discharge, the peritonsillitis and the membrane cleared rapidly. Fourteen of the 18 patients in the test series had thirty-three complications, as compared to forty-four complications for the 13 control patients. Severe complications (cardiac irregularities, pharyngeal paralysis and peripheral neuritis) were more prominent among the latter. The average hospitalization time for the treated was ten weeks as against thirteen weeks for the control patients. The results appear to warrant further investigation.

Edinburgh Medical Journal

48:793-872 (Dec.) 1941

- Surgical Organization in Air Raids. C. F. W. Illingworth.—p. 793.
 Injuries from Projectiles. S. Smith.—p. 799.
 Wound Infection and Accidental Wounds: Antiseptic Eras—Yesterday and Today. J. Fraser.—p. 818.
 Gaucher's Disease: Report of Two Unrelated Cases. E. Emanuel.—p. 843.

Journal of Laryngology and Otology, London

56:337-376 (Oct.) 1941

- Pentothal Sodium Anesthesia in Peroral Endoscopy. G. Young and H. H. Pinkerton.—p. 337.
 Temporal Lobe Abscess: Two Cases with Recovery; Note on Two Stage "Kahn" Operations. N. Asherson.—p. 347.
 Bleeding from External Auditory Meatus Following Fracture of Mandible. S. Suggit.—p. 364.
 Fibroadenolipoma of Tonsil. L. C. Thomson.—p. 368.

Journal of Mental Science, London

88:1-274 (Jan.) 1942

- *Hyperthyrotic Catatonia: Schizophrenic Symptom Complex. R. E. Hemphill.—p. 1.
 Prognostic Factors of Adolescent Psychoses. A. B. Carter.—p. 31.
 Observations in Hypoglycemia: III. Cerebrospinal Fluid Sugar and Coma. W. Mayer-Gross and F. Merlinger.—p. 82.
 Treatment of Tuberculosis in Uncooperative Patients. A. Kennedy.—p. 89.
 Electroencephalography in Cases of Mental Disorder. W. G. Walter.—p. 110.
 Further Observations on Sodium Amytal Experiments. F. Reitmann.—p. 123.
 Blood Amines. D. Richter and Margaret Lee.—p. 127.
 Three Ganser States and Hamlet. E. S. Stern and W. H. Whites.—p. 134.

Hyperthyrotic Catatonia.—Hemphill tried to determine the incidence of hyperthyroidism and its distribution among 2,096 male and 2,654 female patients with recognizable types of mental illness. There were 5 men and 54 women with goiter. Apart from toxic delirium, mania, depression and paranoid paraphrenia, hyperthyroidism was not a significant factor in the production of mental disease. There was no typical postoperative reaction. Simple or nontoxic goiter did not occur in any case of early schizophrenia. Hyperthyroidism in schizophrenia was infrequent and was associated with only a particular form of reaction: hyperthyroid catatonia. The clinical features of this disorder consist of varying schizophrenic symptoms with auditory hallucinations, an acute episode with visual hallucinations, distortion of the body image, inability to differentiate parts of the body and other evidences of instability of the boundaries of the ego. This phase is succeeded by catatonic stupor. In cases of severe hyperthyrotic catatonia the end result is dementia. Systematic determination of the anterior pituitary hormones may provide the key to the schizophrenic illnesses.

Lancet, London

2:719-750 (Dec. 13) 1941

- Group of Head Injuries. J. E. A. O'Connell.—p. 719.
Clotting and Filtration of Citrated Plasma. M. Maizels.—p. 722.
Flexed Plaster Spica for Fractured Femoral Neck. W. A. Cochrane.—p. 726.
Acute Bacterial Endocarditis: Two Unusual Cases. E. A. Cockayne and T. N. P. Wilton.—p. 728.

Medical Journal of Australia, Sydney

2:583-606 (Nov. 22) 1941

- Studies in Tuberculosis. R. Webster.—p. 583.
Active Immunization in Experimental Pertussis. E. A. North, G. Anderson and J. J. Graydon.—p. 589.
Failure of Treatment with Placenta, with Vitamin C and with "Pron-tosil" in Chronic Myeloid Leukemia. J. B. Thiersch.—p. 594.

2:607-634 (Nov. 29) 1941

- Biologic Approach to Infectious Disease. F. M. Burnet.—p. 607.
Dosage Interval in Sulfapyridine Administration. R. Andrew.—p. 612.
Instincts and the Herd. A. A. Abbie.—p. 615.
Permanent Implantation of Gold Radon Seeds: Technic and Indications for Use of Method. H. J. Ham and L. S. Loewenthal.—p. 620.

Schweizerische medizinische Wochenschrift, Basel

71:1233-1356 (Oct. 25) 1941. Partial Index

- Labhardt's Method of Management of Uterine Stump After Supra-vaginal Amputation. F. Amacker.—p. 1234.
Treatment of Eclampsia According to Stroganoff. E. Anderes.—p. 1235.
*Hypophysis and Lactation. W. Berblinger.—p. 1237.
*Radiotherapy of Cervical Cancer. M. Brouha.—p. 1240.
Acute Attack of Glaucoma and Weather. A. Brückner.—p. 1242.
Peroneal Paralysis as Unusual Indication for Cesarean Section. C. Brunner.—p. 1243.
Infiltration of Pelvic Sympathetic in Treatment of Certain Hypogastric Plexalgias, Particularly of Vulvar Pruritus. G. Cotte.—p. 1248.
Cure of Degenerative Lesions of Uterus of Rats with E Avitaminosis by Means of Tocopherol Acetate. V. Demole.—p. 1251.
Permeability of Placenta. R. Doerr.—p. 1253.
*Determination of Prothrombin Time with Human Milk. E. Freudenberg.—p. 1256.
Etiology of Hypovitaminoses in Pregnancy. H. Guggisberg.—p. 1265.
Endometrioses and Endometriomas of Rectosigmoid. C. Henschen.—p. 1271.
Labor in Overweight Women. T. Koller and C. M. Zoller.—p. 1296.
Diabetes and Pregnancy. R. Staehelin.—p. 1324.

Hypophysis and Lactation.—According to Berblinger the relation between prolactin, the lactogenic hormone of the anterior lobe of the hypophysis, and the other hormones of the anterior lobe of the hypophysis has not been clarified. It is possible that this relation is quantitative and that it depends on changes in the numerical ratio of the epithelial cells of the anterior pituitary. It has been established that the acidophilic epithelial cells produce the growth hormone and the basophilic cells the gonadotropic hormones. According to Bates and Schooley the acidophilic epithelial cells are also the source of prolactin, at least in animals. The author thinks that the main cells of the adenohypophysis and the pregnancy cells originating from them must have a special function and suggests that it is possible that the pregnancy cells are the source of prolactin. He is of the opinion that information about the site of prolactin formation can be obtained only in cases in which lactation has developed in the absence of pregnancy and birth and in the presence of certain hypophysial changes. Such cases are rare. The author cites the history of a woman aged 47 in whom lactation began in the absence of pregnancy, abortion or childbirth but in the presence of a hypophysial adenoma which consisted mainly of epithelial cells corresponding to pregnancy cells. The author likewise cites the occurrence of mammary secretion in female and male patients with acromegaly and of lactation in the presence of bilateral ovarian tumors and directs attention to hypophysial changes in some patients with malignant growths. A woman had been operated on for sarcoma and for extensive sarcomatous metastasis. It is suggested that the adenoma formation in the anterior pituitary had some connection with the tumor formation. If prolactin formation takes place in the hypertrophic main cells and in the pregnancy cells, the abnormal lactation can be explained, as well as the time of its onset (shortly before menstruation, when the corpus luteum was in regression; at this time the excess of prolactin can exert its effect). In rats with experimentally produced hypophysial tumors the mammary glands are found in the secretory phase when the tumors contain foci which resemble pregnancy cells. It is highly probable that the pregnancy cells are the site of production of prolactin.

Radiotherapy of Cervical Cancer.—Brouha points out that radium and roentgen therapy have largely replaced the radical surgical treatment of cervical cancer. He reports results obtained by irradiation in the cancer hospital of Liège. The treatment is decided on after a consultation between the radiologist and the clinician. Generally the patient with a cervical neoplasm is treated first by radium and later by transcuteaneous high voltage roentgen irradiation. Of 602 patients treated between 1925 and 1935, 171, or 28.25 per cent, survived more than five years. Of those in whom the lesion was in the first stage 51.3 per cent survived; of those with a lesion in the second stage 34.7 per cent and of those with a lesion in the third stage 14 per cent. This difference in the mortality according to the severity of the lesion is especially pronounced during the first year after the treatment. During the subsequent years the mortality is practically the same for all patients. When the patient has survived beyond the first year without a relapse, the prognosis is no longer influenced by the grade of the initial lesion. The five year survival rate of 28.25 per cent for the total number of cases may be classed with the better statistics. Unfortunately it seems stabilized, as is also the less satisfactory survival rate of 51.3 per cent for patients in whom the lesion was of the first grade. Radiotherapy is the treatment of choice for cancer which has extended beyond the cervix. In certain cases, particularly in those in which surgical intervention is no longer possible, the effects of irradiation sometimes border on the miraculous. Extensive lesions become cicatrized, pain ceases and the general condition improves. A small number of patients are cured, while others are able to lead an almost normal life for variable periods. Further progress must be hoped for from increasingly earlier diagnoses and from a sane rivalry between irradiation and surgical intervention. The former must become more penetrating and more selective; the risks of the latter must be reduced.

Determination of Prothrombin Time with Human Milk.—Freudenberg describes a method which had been outlined by Hauser in 1940. It follows the micromethod developed by Fiechter and by Kato on the basis of Quick's technic. Its only originality is in the fact that human milk is used instead of brain extracts as a source of thrombokinase. Since the measurement of the prothrombin, according to Quick's technic, presupposes constancy of the calcium content, the human milk must be decalcified. This is accomplished by the addition of sodium fluoride. The peroxidase of human milk, being destructive of thrombokinase, must also be removed. This is done by adding pyrrole, the peroxidase toxin. To 20 cc. of freshly obtained breast milk are added 14.7 mg. of sodium fluoride and 0.3 cc. of pyrrole. The milk is stored in the ice box but should not be frozen. The prothrombin time is determined according to the aforementioned micromethods with 0.1 cc. of oxalated blood, 0.1 cc. of human milk (prepared as stated) and 0.1 cc. of calcium chloride solution. The advantage of the use of milk over the use of brain extracts becomes evident when it is considered that the difficulty of keeping brain extract available has been one of the chief obstacles to the regular employment of the valuable determination of the prothrombin time.

71:1357-1408 (Nov. 1) 1941. Partial Index

- Experiments on Cutaneous Allergy Against Simple Chemical Substances. K. Landsteiner.—p. 1359.
Question Whether Dissemination of Allergic Sensitization Is Reflex Process. G. Miescher.—p. 1360.
Analogous Factors in Etiology and Pathogenesis of Asthma and Rheumatism. W. Berger.—p. 1362.
*Practical and Theoretical Interest of Associated Immunizations. G. Ramon.—p. 1366.
*Associated Vaccination Against Smallpox and Diphtheria. T. Rehn.—p. 1368.
*Culture of Ultravirus. P. Hauduroy.—p. 1369.
Immunizing Efficacy of Water Soluble Tubercle Bacilli Autolysates, Especially Grasset Endotoxin. C. Hallauer.—p. 1370.
*Postcarlinal Immunity. E. Freudenberg.—p. 1371.
Pigeons and Barnyard Fowls as Possible Sources of Human Polio-virus or Ormithosis. K. F. Meyer.—p. 1377.

Combined Immunization.—According to Ramon the method of combined vaccinations has been practiced for fifteen years. It consists in the simultaneous development of two or several immunities by means of a mixture of different vaccines. This method rests on the principle of "substances that aid and stimulate immunity." According to it vegetable or mineral substances, such as tapioca, tannin, calcium chloride, alum and

aluminum hydroxide, when added to an antigen, are capable of increasing the specific immunity which that antigen can induce. When these substances were first introduced it appeared hardly possible to use some of them in human subjects, although they had produced good results in animals. It was for this reason that the antityphoparatyphoid vaccine was tried; this vaccine was to assume the role of tapioca. Thus the combined vaccines were realized. The practical application of combined vaccination has furnished numerous and irrefutable proofs that multivalent immunization can be effected by a mixture of several vaccines.

Combined Vaccination Against Smallpox and Diphtheria.—Combined administration of antivariola and antidiphtheria vaccines, according to Reh, has been made obligatory in Italy. The method has incontestable advantages over the individual administration of the two vaccines. Only two vaccinations are necessary for immunization against both smallpox and diphtheria. This constitutes a considerable simplification. The technic employed is as follows: at the first session vaccinal lymph is introduced into the arm (in boys) or leg (in girls), and this is followed by the injection of 1 cc. of diphtheria toxoid into the opposite suprascapular region. Three weeks later the antivariola vaccination is controlled and at the same time a second injection of diphtheria toxoid (2 cc.) is given. After another three weeks the antidiphtheritic immunity is controlled by skin reaction. Complications did not develop in any of the 19 children vaccinated during the double vaccination. The antidiphtheria immunizing power was tested on 14 of the 19 children and proved 100 per cent successful. The antivariola immunity resulting from combined vaccination was tested on rabbits by Sobernheim's method. It was found that the group of animals vaccinated against diphtheria reacted to the solutions of lymph slightly more than the nonvaccinated rabbits. The author regards the combined vaccination against smallpox and diphtheria as a distinct advancement.

Culture of Ultravirus.—Hauduroy points out that for a long time it was accepted that ultravirus cannot be cultured, its growth having failed in numerous mediums. This failure of growth was due to disregard of an essential law of the physiology of ultravirus. Rabic, poliomyelitic and vaccinal virus will not grow in gelose, bouillon or synthetic mediums, no matter how rich. Ultravirus develops only in the presence of living matter; it is biotropic and possesses an essential, exclusive and imperative affinity for living matter. Without such matter it can neither survive nor develop. Vaccinal virus may be developed by inoculation of a heifer's flank and rabic virus by inoculation of the medulla of a rabbit. The author reviews attempts to culture ultravirus in symbiosis with tissue cultures. The characteristic designated as biotropism is so imperative that it dominates not only the technic of culture but all the affinities of ultravirus. The living cell is necessary for their development, and the more intense the life processes of the cell, the more intense is the development of the virus. It has greatest affinity for cells undergoing multiplication. The culture of ultravirus is now possible.

Immunity After Scarlet Fever.—Freudenberg investigated the frequency of secondary attacks of scarlet fever in the same person, the negativity of the Dick test after scarlet fever and the blanching phenomenon of the serum at the end of the disease. He defines as a secondary attack one occurring after an interval of more than three months. The establishment of this interval is important because relapses may occur during the primary attack. He cites reports on the incidence of secondary attacks of scarlet fever and states that in his own material of 1,200 cases there were 19 such attacks. The interval between the first and second attack varied from five months to seven years. Mostly children less than 6 years of age had a second attack. The Dick test was made on 303 convalescent patients with scarlet fever at the end of the sixth week, and 47 per cent were found to be positive. Classification of these patients according to age levels disclosed that positivity predominates among the young children and that only in children over 10 years of age does negativity reach 75 per cent. The blood serum of the majority of those with a positive Dick reaction did not produce the Schultze-Charlton (blanching) phenomenon, whereas the serum of the majority of those with a negative Dick reaction

(6 of 10) did produce the blanching phenomenon. The serum of none of the children less than 6 years of age manifested the blanching phenomenon at the end of the sixth week of the attack of scarlet fever. The author concludes that in children of less than 10 years of age it is unjustified to regard scarlet fever immunity as certain six weeks after the attack. He believes that this immunity is generally overestimated.

Rivista di Malariologia, Rome

20:229-300 (July-Aug.) 1941. Partial Index

*Malarial Inoculation Through Sternal Bone Marrow. N. Quattrin.—p. 229.

Malarial Inoculation Through Sternal Bone Marrow.—Quattrin withdrew blood from patients artificially infected with tertian malarial parasites in the course of the fifth or sixth febrile attack and injected from 3 to 8 cc. of this blood into the sternal bone marrow in 9 cases. Samples of sternal blood were withdrawn at intervals during the first three hours after inoculation. The malarial parasitic forms disappeared rapidly from the sternal bone marrow in all cases but 3, in which scanty normal intraerythrocytic forms were found in the marrow within seventy minutes after inoculation. The reticuloendothelial cells and the protoplasm of the myeloid cells did not contain parasitic forms in any case. Malaria developed in 6 cases after an average incubation period of nine days. The prolonged incubation period in 6 cases and the lack of development of malaria in 3 cases were not related to the amount of blood injected, the number of parasites in the blood and the phase of cyclic evolution of the parasite. The author believes that the bone marrow has a particular effect on malarial parasites which prolongs the incubation period beyond that requisite after intravenous inoculation.

Anales de la Cátedra de Patología, Buenos Aires

3:1-220 (June) 1941. Partial Index

*Artificial Pneumothorax in Pulmonary Tuberculosis Complicating Asthma. R. F. Vaccarezza and R. Cucchiani Acevedo.—p. 67.

Artificial Pneumothorax in Pulmonary Tuberculosis and Asthma.—Vaccarezza and Cucchiani Acevedo made manometric determinations of intrapleural pressure and roentgen studies of the lung before, in the course of and after acute attacks of asthma in cases in which unilateral or bilateral artificial pneumothorax had been induced. Three cases are reported. In 2 cases of unilateral slightly hypertensive pneumothorax the manometric figures showed acute increase of intrapleural pressure during the attack. Administration of bronchial antispasmodic drugs failed to control the attack, which could be permanently controlled by removal of intrapleural air by pleural puncture. In the third case the pneumothorax was bilateral. It was slightly hypertensive in one lung and hypotensive in the other. The intrapleural pressure was not measured during the attack, but roentgen examination showed reexpansion of the lungs and opening up of the cavities. The acute attacks of asthma were controlled by administration of epinephrine. Immediately after control of the asthmatic attack roentgen examination of the lung was again performed. It revealed a greater collapse of the lung and diminution in the size of the cavity. Immediate discontinuance of pneumothorax resulted in a complete control of the asthmatic attacks. The author believes that bronchial expiratory obstruction which occurs in the course of acute attacks of asthma is the cause of acute expansion of the lung and increase in the intrapleural pressure. In asthmatic tuberculous patients the cavities offer great resistance to closure by pneumothorax. This makes it necessary to reach a pressure equivalent to or slightly higher than the atmospheric pressure.

Brasil-Medico, Rio de Janeiro

55:733-746 (Nov. 1) 1941. Partial Index

*Intrapleural Pneumolysis in Prevention of Tuberculous Bilateralization. R. Pardellas and J. Carvalho Ferreira.—p. 733.

Intrapleural Pneumolysis in Prevention of Tuberculous Bilateralization.—Pardellas and Carvalho Ferreira subjected to pleuroscopy a large group of patients with unilateral artificial pneumothorax for pulmonary tuberculosis. Those found to have adhesions were placed in one of two

groups. Patients in one group were treated by pneumonolysis after the second or third insufflation of air. Those in the second group were not thus treated. The improvement in the general condition of patients subjected to pneumonolysis was more evident than improvement in the group which did not have pneumonolysis. Immediate or late recurrence and bilateralization did not occur in patients of the first group, whereas it did occur in several patients of the second group. The authors emphasize the importance of pleurolysis as a routine when adhesions develop after unilateral pneumothorax. The facts that the condition of the patient is apparently good after the establishment of pneumothorax, that the adhesions are not visible on roentgen examination and that the sputum has become negative for tubercle bacilli are no argument against the performance of pneumonolysis. The authors observed in their municipal tuberculosis department that a large number of patients had bilateral pneumothorax during 1938, 1939 and 1940. The performance of pneumonolysis as a routine was established and has been practiced in the department since 1940. Early pneumonolysis stimulates defense reaction of the body and a specific reaction of the normal lung through which the resistance of the organ increases.

Hospital, Rio de Janeiro

21:1-150 (Jan.) 1942. Partial Index

*Vitamin C: Effects on Diuresis. R. João Marques and R. Ribeiro.—p. 119.

Dialectrolytic Administration of Vitamin B₁ in Neuropathic and Myopathic Syndromes. S. Brown.—p. 131.

Effect of Vitamin C on Diuresis.—João Marques and Ribeiro administered vitamin C to patients with moderate insufficiency of the liver and to patients with atrophic cirrhosis, edema and ascites. Acute oliguria, which was present in all cases, was controlled by administration of vitamin C. The preparation used contained natural and synthetic vitamin C in equal amounts. It was administered for a week by intramuscular injection in daily doses of 5,000 units. Some patients were given a second week of treatment with daily doses of 2,000 units. In all cases the elimination of urine was greatly increased. The patients were discharged without edema and ascites and with normal elimination of urine. Four cases are reported. The author believes that vitamin C improves hepatic function with consequent improvement in the water metabolism and in the functions of the capillaries and of the kidneys.

Revista Clínica de S. Paulo, São Paulo

10:107-144 (Oct.) 1941. Partial Index

*Therapy of Cretinism. L. DéCourt.—p. 125.

Therapy of Cretinism.—DéCourt states that the main factors in the successful therapy of cretinism are early diagnosis and adequate thyroid therapy. The daily dose varies from 0.0065 to 0.048 Gm. of thyroid for infants, from 0.032 to 0.097 Gm. for children aged 2 to 4 years and from 0.065 to 0.191 Gm. for children from 4 to 12 years of age. The treatment should be administered without interruption all through the life of the patient.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

81:2329-2376 (Nov. 4) 1941. Partial Index

Chloasma, with Discussion of Theoretical Foundations of Vitamin C Therapy: Two Cases. P. H. J. Lampe.—p. 2342.

*Experience with New Method (Massive Arsenotherapy by Intravenous Drip) in Treatment of Syphilis. J. Bryan.—p. 2350.

Erythema Infectiosum, or Fifth Disease. D. P. R. Keizer.—p. 2368.

New Method in Treatment of Syphilis.—Bryan calls attention to the intravenous drip method of massive arsenotherapy first employed by Hyman of New York and Tzanck of Paris. In the last two and a half years Bryan used this method in 32 cases. He administered daily by intravenous drip 1.5 Gm. of neoarsphenamine diluted in 300 cc. of physiologic solution of sodium chloride. The procedure is repeated three days in succession until a total of 4.5 Gm. of neoarsphenamine has been given. The short duration is the chief advantage of this method, because it enables the patient to regard treatment as a sort of operation instead of being obliged to return regularly for injections over long periods. The method involves certain dangers. In 4 patients (12.5 per cent)

the renal function became seriously impaired, but the disorder cleared up in a short time and no permanent injury of the kidney resulted. In 3 patients (11 per cent) mild peripheral neuritis developed. The author, unlike other observers, encountered no instances of cutaneous disease following massive arsenotherapy. Although more time will have to elapse before final evaluation is possible, the author is favorably impressed with the method and suggests that in a modified form it might become the method of choice for the treatment of early syphilis.

81:2377-2476 (Nov. 11) 1941. Partial Index

*Significance of Pregnancy Reactions According to Aschheim-Zondek and Friedman in Diagnosis of Hydatid Mole and Chorioepithelioma. R. E. J. Ten Seldam.—p. 2378.

Malignant Tumors of Intestine. S. Tjokronegoro.—p. 2394.

Further Experiences with Aspiration Punctures in Histologic Diagnosis of Tumors. H. Müller.—p. 2421.

Roentgen Treatment of Cutaneous Carcinomas. G. J. Staverman.—p. 2434.

Roentgen Diagnosis of Malignant Pulmonary Tumors. W. Z. Johannes.—p. 2442.

Histologic Peculiarities of Carcinoma of Tongue. G. Bras.—p. 2465.

Pregnancy Reactions in Diagnosis of Hydatid Mole and Chorioepithelioma.—Ten Seldam reports his experiences with Aschheim-Zondek and Friedman reactions during five years, in which eight hundred tests were made. Of this number one hundred and sixty-two were made because of suspected mole, of suspected malignant degeneration of a mole, as control after birth of a mole or after uterine extirpation for chorioepithelioma. These one hundred and sixty-two tests were made on 109 patients, of whom 58 had molar pregnancy, 8 had chorioepithelioma and 43 had neither. The author concludes that the tests for gonadotropic substance in the urine of women represent a distinct diagnostic gain. However, too great importance should not be attached to a high level of the substance during the first months of pregnancy for the diagnosis of hydatid mole. Lower values than are customary for hydatid mole do not constitute an absolute sign against this diagnosis. Of greatest importance is the quantitative reaction as control following the birth of a mole. If the reaction remains strongly positive for a long time or if it increases in severity after an initial reduction or a negative phase, it is strongly suggestive of chorioepithelioma, if a new pregnancy can be excluded. The test must be repeated at regular intervals until it becomes negative, and even after that it must be repeated at least once. The time necessary to produce a negative reaction is of less importance than the regular decrease in the intensity of the reaction. The reaction should be negative one month after the total extirpation. Absence of a negative reaction indicates metastasis. It is possible that at one time not enough chorionic tissue is present to make the reaction positive, but still enough for the development of chorioepithelioma. It is desirable to make the test also with spinal fluid in cases in which molar pregnancy or chorioepithelioma is suspected.

Ugeskrift for Læger, Copenhagen

103:1331-1356 (Oct. 16) 1941

*Treatment of Pneumonias in Childhood with One Single Large Dose of Sulfathiazole (Shock Dose), Illustrated by Seventy Cases. C. Friderichsen and P. Søbye.—p. 1331.

Sulfathiazole Rapid Treatment of Gonorrhea. P. Bonnevie.—p. 1342.

Pellagra: Case. M. Jversen.—p. 1343.

Deep Pressure Necrosis Caused by Ordinary Rubber Band: Case. J. V. Nielsen.—p. 1345.

Treatment of Pneumonia in Childhood with Single Large Dose of Sulfathiazole.—Friderichsen and Søbye state that in the treatment of pneumonia in children sulfathiazole is an exceedingly valuable agent, superior to sulfapyridine because of its rapid elimination and the few side effects. Of 129 children with pneumonia treated with sulfathiazole, 70 were given a single shock dose and 59 were treated with multiple doses for four days. The simpler administration of the large dose is as effective as the treatment with multiple doses, causes fewer secondary toxic effects and costs half as much as the continuous treatment. The shock dose of sulfathiazole given children weighing up to 13 Kg. was 0.3 Gm. per kilogram of body weight, while children weighing 20 Kg. received 0.2 Gm. and those weighing 30 Kg. received 0.14 Gm. per kilogram of body weight; the maximal dose was 4 to 5 Gm.

Book Notices

The Retina: The Anatomy and the Histology of the Retina in Man, Ape and Monkey, including the Consideration of Visual Functions, the History of Physiological Optics and the Histological Laboratory Technique. By S. L. Polyak, M.D. A Fiftieth Anniversary Publication of the University of Chicago Press. Cloth. Price, \$10. Pp. 607, with 100 illustrations. Chicago: University of Chicago Press, 1941.

The object set by the author in his book is "the elucidation of the complex structure of the retina: the identification of the types or varieties of neurons which compose it, and the understanding of their synaptical relationships . . . the modes of integration of the various nerve cells into a composite texture." Beginning nine years ago with examination of the monkey's retina by analytic methods, the author was led into a most extensive study of the retina of other animals, including man. Although his own investigation was undertaken from the point of view of neuroanatomy, any one who expects a dry and technical exposé of isolated histologic findings is due for a pleasant surprise in this book, for the author has included a history of conceptions of the visual processes through the ages and has arrived at some exceedingly stimulating ideas as to the relations of the various functions of the eye to the complex structures revealed by him and by other students in this field.

A technical section describes the various methods employed in study of the retina and the part played by each in the analysis of the retinal neurons. Since a study of the synapses occurring in the retina was of primary importance, stress is placed on the value of the supravital staining method of Ehrlich and the silver and gold impregnation method of Golgi with its modifications by Ramón y Cajal.

For his historical section the author has gone back to Greek and Latin sources and, with the aid of Max Meyerhof of Cairo, to the Arabic manuscripts. A number of diagrams of the visual apparatus, some not previously printed, are reproduced from these sources. The story of how our present knowledge of the visual apparatus has developed from the mass of misconceptions embodied in Greek and Arabic writings, of the bypaths and blind alleys on which early scholars were led to depart as a result of persistently erroneous authority and of how the results of technical progress, finally coming into the possession of a few men of genius such as Kepler, Müller and Ramón y Cajal culminated in our present conceptions of visual function, is a fascinating one. Briefly, the Greek ideas which placed the seat of vision in the crystalline lens were preserved and disseminated by Arab scholars and, after the darkness of the middle ages, were taken up by the first European writers, the link of continuity being the writings of the Moorish scholars in Spain. One of these Arabic scholars, Ibn Rushd, better known as Averroës, had in the twelfth century described, probably from an unknown Greek source, a conception of the image formed on the retina. It was not until 1583 that Platter of Basel offered a development of this idea, including the refraction of light rays by the dioptric media. He proved that the retina is the place where the visual image is formed. It remained for Kepler, however, in 1603 to calculate the effects of the refractive media and to provide exact formulas on which modern physiologic optics rests. Study of the retina was hampered by the belief that the photoreceptors must be on the vitreous surface, so it was not until 1853 that Müller proved the rods and cones to be the true photoreceptors. Study of the individual neurons in the retina first produced useful results in the hands of Ramón y Cajal and his pupils, but since his time little progress has been made until the work of the author.

His work, as shown by many finely reproduced illustrations in this book, included a careful study of the individual retinal neurons by analytic methods, with emphasis on the synaptic connections of the various units. The details of this work are too complex to be even touched on in a review. One comes out of it, however, with a conception of an integrated system of structures much more complex than would be obtained from presentations of the subject in textbooks of ophthalmology or anatomy. While more complex, it is also more complete and offers the possibility of explaining certain phenomena of vision

in ways which were previously impossible. Without abandoning his role as neuroanatomist, the author has had the courage and imagination to follow his microscopic observations to conclusions concerning the part which the retinal structure may be supposed to play in the complex processes of vision. One of these is color vision. The author finds no evidence for the existence of separate types of cones which might be receptive to light of certain wavelengths. He believes that each cone is capable of response to all colors and suggests that analysis of this reaction produced in the cones may be carried out through the connections of each cone with bipolar cells of different type. There are actually reasons for believing that the midget bipolar cells may be especially sensitive to the reaction induced in a cone by light of long wavelength.

The monosynaptic midget bipolar cells and the midget ganglion cells are seen to have a one to one connection with the cones, especially with the specialized thin cones found in the foveal region. These connections form a "pure, or private, cone system" which seems to represent "the instrument for the most delicate spatial analysis or discrimination of the visual stimuli." By connections with other polysynaptic or diffuse bipolar cells, however, and through them with several ganglion cells of various types, impressions from larger or smaller areas of the retina may reach the central nervous system. By synapses of various types "gateways" of varying permeability are formed, by which it is conceivable that weaker stimuli, for example, may reach only certain types of bipolars and produce a specific response in them only when a number of photoreceptors are stimulated, hence mediating coarser impressions of larger objects. The system of intraretinal association neurons represented by the horizontal and possibly some of the amacrine cells may function in some way so as to lower or increase the threshold of the photoreceptors.

These are only a few of the ideas which are to be found in Dr. Polyak's book. Further studies have led him to a consideration of the higher visual pathways. These are briefly summarized in this book and will form the subject of another volume. In format and in reproduction of illustrations the book is up to the highest standards.

Science and Sanity. An Introduction to Non-Aristotelian Systems and General Semantics. By Alfred Korzybski, Director Institute of General Semantics, Chicago. With supplementary introduction and bibliography. The International Non-Aristotelian Library Publishing Company. Second edition. Paper. Price, \$6. Pp. 798, with illustrations. Lancaster, Pennsylvania & New York: Science Press Printing Company, Distributors, 1941.

Language in Action. By S. I. Hayakawa, Assistant Professor of English, Illinois Institute of Technology, Chicago. Cloth. Price, \$2. Pp. 245. New York: Harcourt, Brace & Company, 1941.

Language Habits in Human Affairs: An Introduction to General Semantics. By Irving J. Lee, Ph.D. With a foreword by Alfred Korzybski. Cloth. Price, \$1.75. Pp. 278, with illustrations. New York & London: Harper & Brothers, 1941.

1. This volume, from the Institute of General Semantics, is obviously the basis of many of the current writings in semantics which have attracted such large public audiences. The average reader would do well to consult such works as those of Stuart Chase on "The Tyranny of Words" and Hayakawa on "Language in Action" as an introduction to this more profound contribution. As Stuart Chase has said, "Korzybski has spent ten years on the book, raiding nearly every branch of science, from neurology to the quantum theory, in a stubborn attempt to find how words behave, and why meaning is so often frustrated." The author, who is both a mathematician and an engineer, has endeavored to synthesize human knowledge in various sciences with a view to making all knowledge more understandable. The author finds in his study of semantics an approach to psychosemantic disorders.

2. It might seem strange to have a book on the proper use of English written by a Japanese, but this book has the special value of simplicity in its approach to the subject, giving to words a significance such as they do not have until one is fully informed of their meanings.

3. In these times, when the deliberate misuse of language is an art and when people need more and more to be able to comprehend everything that is said, such books as these are veritable

guide books to human understanding. The book by Lee contains some excellent line drawings, and each of the chapters is supplemented with hints for further study on the use of language in human affairs.

Help Your Doctor to Help You When You Have Food Allergy. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 50. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Sick Headache or Migraine. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 37. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Colitis. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 30. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Gastric or Duodenal Ulcer. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 53, with 3 illustrations. New York & London: Harper & Brothers, 1941.

Help Your Doctor to Help You When You Have Gallstones and Disease of the Gallbladder. Dr. Walter C. Alvarez, Editor-in-Chief. Cloth. Price, 95 cents. Pp. 41, with 5 illustrations. New York & London: Harper & Brothers, 1941.

These books are the first of a series written to supply answers to the questions which enter the minds of sick persons concerning their ailments. A patient with accurate and up-to-date information concerning his disorder should cooperate more intelligently with the physician. The material presented in the books is scientifically accurate, as it must be when prepared by authorities of such ability in their various fields of medical practice. The presentation is clear and simple enough to permit of complete understanding by the average person.

Essentials of Prescription Writing. By Cary Eggleston, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College, New York. Seventh edition. Cloth. Price, \$1.50. Pp. 133. Philadelphia & London: W. B. Saunders Company, 1942.

One of the severest critics of any publication is time. That "Essentials of Prescription Writing" is in its seventh edition is an excellent indication of the usefulness of this little book. It began as an accumulation of a series of notes which were published in book form in 1913. As the author points out, the nature of the book precludes radical changes in this edition; nevertheless, revisions are evident. For those not familiar with the book, its purpose is best described by the author's brief statement "This small volume is intended to provide the student of medicine with a succinct yet sufficient treatment of the subject of 'prescription writing.'" It does just that. There are eleven chapters: introduction, Latin grammar, grammatical construction of prescriptions, weights and measures, the practical writing of prescriptions, doses of drugs, vehicles, incompatibility, modes of administration of medical agents, suggestions for prescribing official preparations and practice prescriptions. As in previous editions, these chapters are presented in a flowing but concise style with a minimum of verbiage. This is a handy pocket size book that is an addition to the library of any medical student, physician or pharmacist or, for that matter, to the library of any one who is actively interested in prescribing, compounding or promulgating drugs. It is gratifying to note the acknowledgment given to Dr. Robert Hatcher for "inspiration and encouragement." Dr. Hatcher has provided this for many of our present critical investigators.

Prevention of Malocclusion. By Paul Guy Spencer, D.D.S. Cloth. Price, \$5. Pp. 234, with 217 illustrations. St. Louis: C. V. Mosby Company, 1941.

By the statements of the preface, this is intended as a textbook for dental students and as a guide for practitioners. A glance at the table of contents shows that twelve of the eighteen chapters are related to treatment rather than to prevention. Diet, internal secretion and inheritance are covered in nine pages. Many years ago Dr. E. H. Angle and other investigators pointed out that many, if not most, malocclusions have their beginning in simple conditions from which most complicated ones may develop. Attention to these conditions at the beginning may result in normal development. This is the fundamental thesis of value in the book, but it is not as clearly or as well developed as it was forty or fifty years ago. The book contains many excellent observations. With a great many of

the views expressed, however, the reviewer finds himself in violent disagreement. The title is ill chosen, for the work is rather a superficial manual on the treatment of malocclusion than a textbook on prevention. It seems intended to encourage the general practitioner and the student to attempt orthodontic management without adequate knowledge and training. Although the text contains much fine material, it is not well organized and does not display clear thinking. The illustrations, especially the pictures of dental models, are poor, and in general the technic is antiquated and obsolete. It is not well adapted to use as a college textbook or to the needs of the general practitioner who aims to give his patient the best service. There is no justification for the attitude that only persons endowed with special gifts and training are capable of practicing a special field in their general practice, but they should not be encouraged to offer special service unless they are willing to acquire the knowledge and technic necessary for its execution.

Our Climate. Useful Information Regarding the Climate Between the Rocky Mountains and the Atlantic Coast, with Special Reference to Maryland and Delaware. Prepared by John R. Weeks. Issued by the Maryland State Weather Service. Edward B. Mathews, Director. In Cooperation with the United States Weather Bureau. Francis W. Belcher, Chief. Sixth edition, revised. Paper. Pp. 66, with illustrations. Baltimore, 1939.

Claiming that the climate of Maryland and Delaware is one of the best in the United States, this little book proceeds to paint a rosy picture of the natural advantages of this region. It is admitted that the summers are warm, but it is claimed that cool spells usually come to temper this warmth. No mention is made of the really depressive heat which prevails when these cool spells fail to come. The book has practically no bearing on health or disease, as the climate of Maryland and Delaware has no known health advantages that would recommend it to sick persons seeking a more healthful place of abode.

The 1941 Year Book of Public Health. Edited by J. C. Gelzer, M.D., Dr. P.H., Director of Public Health, City and County of San Francisco. Cloth. Price, \$3. Pp. 544, with 20 illustrations. Chicago: Year Book Publishers, Incorporated, 1941.

The second of the Year Book series on public health provides excellent and useful material for physicians and public health workers, whether they are administrators, field workers or epidemiologists. The most valuable articles selected from the leading professional journals both here and abroad have been carefully abstracted, and the editorial comments aid materially in evaluating the points of view expressed in many of the original papers. The practicing physician will find many articles abstracted which he may not have encountered in his usual readings. At present, when public health is in the forefront of the physician's mind, this book has particular importance.

Agua curativas y lugares de recreo de México. Por el Dr. Harry Petters. Paper. Pp. 130, with illustrations. Mexico, D. F.: Editorial Orbis, 1941.

Balneoterapia y crenoterapia: indicaciones y contraindicaciones. Por el Dr. Harry Petters. Paper. Pp. 50. Mexico, 1941.

These two publications make available general information concerning the various mineral resorts and so-called curative springs in Mexico. The publications include also the usual commercial announcements of some of these resorts and their products. Similar publications are available for other countries, but as far as we know nothing similar or even slightly comprehensive has been prepared for the United States. Perhaps the new Committee on American Health Resorts of the American Medical Association will be able to develop a publication of this kind with authoritative scientific statements.

Common Skin Diseases. By A. C. Roxburgh, M.A., M.D., B.Ch., Physician in charge of the Skin Department, St. Bartholomew's Hospital, London. Sixth edition. Cloth. Price, 16s. 1p. 436, with 177 illustrations. London: H. K. Lewis & Co., Ltd., 1941.

This continues the excellence of the previous editions. The author has endeavored to bring the book up to date by adding sections on thorium X dermatomyositis and has expanded the chapter on avitaminoses. The book is exceedingly well written and well balanced with a useful chapter presenting an index of preliminary diagnosis for students.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

THROMBOPHLEBITIS, PUERPERAL SEPSIS AND PULMONARY EMBOLISM

To the Editor:—What differentiation can be made between thrombophlebitis and puerperal sepsis when pulmonary embolism occurs as a postpartum complication? Can thrombophlebitis occur without bacterial invasion of the blood stream? Would four or more negative blood cultures and negative cultures of the vaginal secretions be considered sufficient evidence to rule out bacteremia? Would the use of heparin interfere with the localization and resolution of small pulmonary emboli in cases of thrombophlebitis with pulmonary embolism?

Stiles D. Ezell, M.D., Middletown, N. Y.

ANSWER.—Puerperal sepsis is a broad term under which are grouped all the infections of the reproductive tract which occur in the puerperal woman. Thrombophlebitis is one manifestation of this complication. The veins of the placental site may contain septic thrombi which may gradually extend to involve the pelvic veins. These thrombi provide emboli which may be transported to distant foci. Most often pulmonary emboli arise from thrombi in the uterine or ovarian veins. The episodes of chills and fever which characterize the septic course of thrombophlebitis are the result of showers of bacteria in the form of small emboli which invade the systemic circulation. Bacteremia is usually present in thrombophlebitis. However, there may be few organisms in the blood at any one time. Thus a negative blood culture or several such cultures do not rule out thrombophlebitis.

The proper technic of blood culture will increase the incidence of positive results. The blood should be drawn during a chill or at the height of the fever. Fifteen or 20 cc. should be placed in nutrient broth and incubated for a week. If a growth appears it should be subcultured aerobically and anaerobically.

Thrombi in veins can occur without bacteremia, as is exemplified by thrombi in the lower extremities. These are the result of blood stasis and trauma to veins.

There is little information available on the use of heparin in puerperal thrombophlebitis. If heparinization is commenced early it is possible that thrombosis and subsequent embolic phenomena can be prevented. Apparently little can be accomplished by heparin after pulmonary embolism has developed. Heparin therapy should not interfere with the normal resolution of pulmonary infarction.

TREATMENT AND MARRIAGE IN LATE CONGENITAL SYPHILIS

To the Editor:—In the course of a routine hospital examination in 1936 a youth was found to have a 4 plus Wassermann reaction. The report of findings was given to the mother, who readily admitted that the father had syphilis. She submitted to a blood test and was also found to have a 4 plus Wassermann reaction. For four years the youth was given intensive treatment with neoarsphenamine, bismuth compounds and iodides. A recent blood test was 2 plus. The patient is feeling well with no objective or subjective signs of syphilis. He is now of age and contemplates marriage. In view of the blood findings should he marry? What advice should be given him? Should intensive treatment still be persisted in and, if so, how much longer?

M.D., California.

ANSWER.—From the evidence given it is presumed, although not definitely proved, that the youth in question has late congenital syphilis. Under these circumstances seroresistance in spite of prolonged antisyphilitic treatment is not unusual. Before permission to marry is given his spinal fluid should be examined, since the question of further treatment and, if so, of what type depends entirely on the character of the spinal fluid.

If the spinal fluid is normal the patient, having received four years of chemotherapeutic treatment, has now been adequately treated. The aim of treatment in such a situation is the prevention of outspoken clinical manifestations of disease. With the amount of treatment so far given there is about an 80 to 90 per cent assurance of indefinitely continuing good health, regardless of the serologic outcome in the blood.

If, on the other hand, the spinal fluid is abnormal, treatment should almost certainly be continued, though what kind of treatment should be given and over what period of time cannot be stated without knowledge of the spinal fluid findings.

As to marriage there can be no objection to this under either set of circumstances, provided the fiancée knows that the patient

has congenital syphilis. There is no risk of infection to the wife from a husband with late congenital syphilis; and children, if any, will be normal if the mother is not infected.

The reason for insistence on informing the fiancée of the patient's condition lies entirely in the fact that possible subsequent progress or relapse, most likely in the form of interstitial keratitis or nerve deafness, cannot be absolutely guaranteed against. Should the fact of the husband's infection, even though congenital, be accidentally discovered by the wife after marriage rather than honestly discussed before, there is some risk of marital discord.

Neither in patients with congenital nor in those with acquired syphilis does permission to marry (which depends almost entirely on potential infectiousness and on no other factor) have anything to do with the blood test.

The issues raised regarding the treatment of late congenital syphilis and regarding the marriage of syphilitic patients are much more fully discussed in Moore's *Modern Treatment of Syphilis*, second edition, Springfield, Ill., Charles C. Thomas, 1941.

"SHIN SPLINTS"

To the Editor:—I should appreciate information on a condition known as "shin splints." After many years of physical inactivity due to a fracture of the semilunar cartilage sustained while playing college football I have recently been attending a Y. M. C. A. regularly in an attempt to get back in shape. I weigh 230 pounds (104 Kg.), about 40 pounds (18 Kg.) overweight. I have been playing "paddle ball," which is similar to four wall handball, possibly foster. I frequently have pain over the lower half of the tibia while playing, starting mildly but getting more severe as I continue to play. This is associated with a tired aching feeling in the thighs extending up to the hip. This lasts for about twenty minutes after I stop playing, after which a dull ache persists for hours, and the tibia is sensitive to percussion. A former track star at the Y mentioned that the syndrome was common in athletes, being known as "shin splints." Could you give me any information on the entity?

Paul T. Perugini, M.D., New Rochelle, N. Y.

ANSWER.—The term shin splints is used by athletes, especially track men. The condition is probably due to myositis of the tibial and toe extensor muscles. It may be tendonitis, myositis or myofascitis with an element of periostitis. It is usually due to multiple minimal traumas, such as occur in tapping against hard surfaces, such as a track, a cement floor or a hard wood floor in a gymnasium. It may be due to repeated sudden starts and stops.

In nearly every athletic pursuit one leg is subject to more shocks than the other. Is the condition unilateral or bilateral?

A roentgenogram of the tibia would rule out periostitis or any other lesion, including a neoplasm. Reduction of the weight is advised.

While at the University of Chicago, in charge of the medical supervision of athletic teams, Molander saw many such injuries, and in the majority of instances they were in track athletes. They also occurred in football and basketball players.

The early diagnosis of the condition is sometimes difficult. In the great majority of instances the athlete states that he has a dull aching pain over the anterior surface of the middle and lower thirds of the tibia and fibula and that he finds it hard to raise the heel from the floor without experiencing a sharp pain over the area described. Shin splints occur as a rule early in the season and in the majority of cases are caused by running on a hard board surface which produces a constant jarring. The patients are slow in recovering.

The most noticeable symptom is severe tenderness over the anterior surface of the lower and middle thirds of the tibia and fibula. This area feels hard and tense. Support by means of circular taping seems to give relief. Molander attributed this condition either to a tearing of the origin of the dorsiflexors of the foot or to a severe tendon strain. The former explanation seems the more plausible because of the persistent aching pain, which becomes intensified while one stands on the toes, and because of the long recovery period.

In treatment Molander employed a circular adhesive strapping and additional long strips of tape from the knee and around the ankle, keeping it at a right angle. After twenty-four hours the involved extremity is placed in the whirlpool bath at 105 or 110 F. for at least half an hour. Then the part is dried with infra-red radiation; the ankle is kept at all times at a right angle. Drying is followed with massage of the entire extremity, the tender areas being avoided. When tenderness has disappeared a graduated system of therapeutic exercises is used, getting the patient to an upright position for athletic work when function of the foot has returned to normal. This may take weeks or even several months.

The " " is quoted from Thorndike, Augusten, *Diagnosis and Treatment*, 1938.

Shin splints in track, cross country and other sports are a definite injury—a tearing of the origin of the tibialis posticus muscle from the tibia in its lower third. This is caused by running on a hard surface early in the season and continuous, constant jarring and is slow in recovery. Heat and massage with three-quarter circular strapping (squeezing the gastrocnemius around the posterior surface of the tibia) gives relief as long as the strapping is maintained. Rest, of course, is the adjunct most needed, and this should be continued long enough to permit the torn muscle attachment to heal.

PROBABLE DIABETIC COMA

To the Editor—A white housewife aged 28 was seen at home in a severe coma. She was given 1 ampule each of caffeine and nikethamide and had regained consciousness on arrival at the hospital. The history was unreliable, but there was mention of diarrhea and vomiting for two to three days, the length of unconsciousness was unknown. There was no history of diabetes or drug addiction. The patient was able to answer questions, but the answers were so garbled that they defied interpretation. There was no odor on the breath. The pupils were widely dilated, and they dilated further in response to light. The chest was clear; the heart sounds were normal, the blood pressure was 110 systolic and 90 diastolic, the rectal temperature was 94 F. The abdominal and rectal examinations gave negative results. There were no neurologic abnormalities. A working diagnosis of shock due to some unknown toxin was made. Catheterized urine showed sugar 4 plus, albumin 4 plus and many red blood corpuscles, tests for acetone and diacetic acid gave negative results. Four hours after admission the temperature dropped to 93 F. A heat cradle was applied to the body. Examination of the eye-grounds gave negative results. The lumbar puncture showed normal pressure, clear fluid and no evidence of block, the Wassermann reaction of the spinal fluid was negative, the colloidal gold curve was 0000000000, the Pandy reaction was positive (1 plus); the fluid showed a trace of xanthochromia. The temperature reached 102 F., and the patient was still responding in incoherent speech. The white blood count at this time was 63,400, with 94 per cent polymorphonuclear leukocytes, 6 per cent lymphocytes and a shift to the left. The red blood count was 4,200,000 and the hemoglobin content 77 per cent. The blood sugar level was 490 and the nonprotein nitrogen 73 mg. per hundred cubic centimeters. The patient was given 500 cc. of whole blood, 2,000 cc. of Hartman's solution by hypodermoclysis and 150 units of regular insulin, plus heavy doses of the vitamins. She failed rapidly, however. Three catheterizations during the twenty-eight hour course had yielded 80 cc. of urine. At postmortem examination there were no positive findings. There was no evidence of fracture of the skull or injury to the brain. The heart and lungs were normal. The kidneys and liver showed no evidence of toxic damage. Can you suggest any toxin or drug which might have produced the clinical and laboratory effects mentioned and yet have shown no apparent trace of its virulence at autopsy?

Charles H. Pitegoff, M.D., New Haven, Conn.

ANSWER.—Positive diagnosis is not possible from the data available, but those furnished strongly suggest that diabetic coma was the cause of death. The patient was in coma with a low rectal temperature without signs of an organic cerebral lesion and showed glycosuria with evidence of failing renal function in the absence of postmortem evidence of renal disease. She showed albumin, a leukocyte count of 63,400 and a blood sugar content of 490 mg., with a nonprotein nitrogen level of 73 mg. per hundred cubic centimeters. It is regrettable that the blood plasma was not tested for acetone and its content of carbon dioxide determined. The absence of acetone and diacetic acid in the urine is most unusual in diabetic coma but has been known to occur in cases of renal block.

EFFECT OF TEMPERATURE OF INTRAVENOUS SOLUTION

To the Editor—Because of the reaction from intravenous injections of dextrose in saline solution it has been decided to give the solution at room temperature. I should like to know if this is satisfactory after anesthesia and also if it has the effect of lowering the body temperature. In the past the solution for intravenous use has been warmed to body temperature.

M D, California.

ANSWER.—Reactions in general and chills and fever in particular following the intravenous administration of dextrose in saline solution are due almost entirely to contamination of the solution or of the apparatus used for the administration. If concentrated (50 per cent) dextrose is administered intravenously rather rapidly, because of the high concentration a slight degree of vascular reaction may develop, but even this type of reaction occurs rarely. Although it is more physiologic to administer dextrose intravenously at body temperature, administration of the solution at room temperature should not make any essential difference as far as reactions are concerned. If the solution is administered slowly, the temperature of the room should not exert any appreciable influence in lowering the temperature of the patient's body.

LIFE EXPECTANCY AFTER SPLENECTOMY

To the Editor—I am anxious to obtain information concerning the following: 1. Does splenectomy alter life expectancy when (a) the spleen is removed for traumatic rupture or (b) the spleen is removed because of idiopathic thrombocytopenic purpura or familial (congenital) hemolytic icterus? 2. If a person has had splenectomy because of traumatic rupture of the spleen and is otherwise normal, will insurance companies sell him life insurance in exactly the same manner as if the spleen had not been removed? I have in mind the question of the relation of the spleen to resistance especially as concerns antibody formation. While it appears that most physicians feel that removal of the spleen is rapidly compensated for by hyperplasia of the other organs of the reticulo-endothelial system I am unable to find in the literature definite experimental or statistical proof of this. I am assuming that the patient has fully recovered from the trauma and the operation, so that operative risk is not a factor.

M D, Ohio

ANSWER.—1. Removal of the spleen following traumatic rupture does not alter life expectancy, assuming that the patient has fully recovered from the effects of the trauma and operation and there are no postoperative complications. The same statement applies to splenectomy for idiopathic thrombocytopenic purpura and familial hemolytic icterus. In fact, life expectancy in these conditions may actually be increased, since splenectomy often prevents fatal complications for many years. Several patients now under observation were subjected to splenectomy fifteen to twenty years ago for these diseases and others, such as Gaucher's disease, and they show no deleterious effects attributable to the absence of a spleen. The various functions of this organ are taken over by other organs or tissues of the body. Resistance to various infections, for example, is just as high in these patients after splenectomy as before.

2. The practice of insurance companies with regard to life insurance following splenectomy for traumatic rupture is, in general, as follows: No insurance is issued during the first two years after operation. During the third and fourth years insurance is issued at rates slightly higher than standard. Five years after splenectomy, if there is no complicating disease, the person is insured at standard rates. Apparently during the first two years insurance companies believe there is still a risk of complications secondary to the trauma and operation. If the person is normal five years postoperatively his life expectancy is considered normal. Since the number of cases of splenectomy for traumatic rupture is relatively small, an accurate statistical evaluation of life expectancy is not available to insurance companies as yet. The few persons under observation have not differed in this respect from the general population.

STRABISMUS IN A YOUNG CHILD

To the Editor—In Queries and Minor Notes in The Journal, Jan. 3, 1942, page 93, with reference to strabismus in a young child, your correspondent stated that the good eye should be occluded to compel the use of the other eye to prevent amblyopia. You state that this is "important for several years." You further state that if due care is exercised along these lines, "operation may be postponed indefinitely without the sight becoming impaired."

I wish to take exception to these statements. Binocular vision is developed during the first five or six years of life, and even if the visual acuity is maintained by covering first one eye and then the other (which is seldom done) binocularity has been lost to the patient by this form of treatment. By postponing the operation the patient loses the opportunity to develop binocularity and is encouraged to form vicious habits such as abnormal retinal correspondence or alternate suppression of one or the other eye.

The indication in this case is a definite diagnosis as to whether the case is concomitant or paralytic as suggested by the writer, an examination under atropine to determine the refractive condition and the use of glasses if needed.

If the case is paralytic, 3 to 5 drops of saturated solution of potassium iodide three times a day after eating should be given over a long period and the encouragement of the head position for the maintenance of binocularity.

If the case is concomitant, patching of the good eye, use of glasses if needed, and early orthoptic training are indicated. After one year of this type of care, if the squint has not been relieved, operative procedures are indicated in order to give the child an opportunity to secure binocular vision in early life.

Oscar Wilkinson, M.D., Washington, D.C.

NOTE.—The letter was referred to the authority who prepared the reply. He writes:

To the Editor.—The statements to which the critic takes exception are well established. His advice as to treatment is for the most part routine. The writer of the question was not interested in routine ophthalmologic treatment. There is a difference of opinion about the best age at which to operate. A great majority of children are not operated on until they are between 8 and 12 years of age, and good results are obtained. A minority who are fond of operating advocate early operation. It has not been shown that their results are better. Reoperation is often necessary later. The critic's remark that postponing operation means giving up hope of "binocularity" is not borne out by the facts.

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THE MENOPAUSAL SYNDROME

TREATMENT WITH THE IMPLANTATION OF
CRYSTALLINE ESTRONE PELLETS

HENRY G. BENNETT JR., M.D.

AND

RICHARD W. TE LINDE, M.D.

BALTIMORE

The principle of estrogen replacement therapy in the management of the menopausal syndrome is well established as sound. Estrogen preparations of proved potency have become available during the past decade, and many satisfactory therapeutic results have been reported. The standard method of administration of these estrogen preparations, however, is far from satisfactory as it requires frequent hypodermic or intramuscular injections of the hormone preparations, usually in oil solutions, repeated as often as two to three times each week. Obviously, if it was possible to supply a patient's estrogen requirement for weeks or even months with a single injection, the ideal method of replacement therapy would be more nearly attained.

An approach toward such an ideal method came to hand in 1937 when Deanesly and Parkes¹ announced a new technic in hormone administration whereby solid pellets of crystalline hormone were implanted subcutaneously to be absorbed slowly over a long period of time. Such pellets they found effective in producing prolonged hormonal stimulation in laboratory animals. A year later Bishop² treated a young human castrate with a similar subcutaneous pellet of estrone and reported partial relief of menopausal symptoms for five weeks.

Following these promising introductory reports it seemed worth while to subject this new method to extensive clinical trial. Therefore in the fall of 1938 such a study was begun in the gynecologic dispensary of the Johns Hopkins Hospital and a preliminary report of the results in 21 menopausal patients treated with subcutaneous theelin (estrone) pellets was made.³ In this series of patients it was found that, after the implantation of theelin (estrone) pellets, relief of subjective symptoms began within two weeks and persisted as long as fourteen and a half weeks. Objectively it was demonstrated that the urinary estrogen

level rose and remained elevated for correspondingly long periods, that the urinary level of gonadotropic hormone was depressed in 60 to 70 per cent of the cases and that prolonged stimulation of the vaginal mucosa occurred as observed in biopsy specimens. These objective findings were interpreted to show beyond doubt that the theelin (estrone) was absorbed constantly from the implanted pellets for long periods of time and that the estrogenic properties of the absorbed theelin were not impaired by the pellet method of administration.

Other investigators have since reported the effects of various estrogens administered by the pellet method. MacBryde, Freedman, Loeffel and Allen⁴ treated 6 surgical castrates with 100 mg. diethylstilbestrol pellets implanted into a small incision in the lumbar region. Vaginal smears showed complete estrous change in seven to ten days. Endometrial biopsies showed "active proliferation" as early as seven days after implantation. Subjective improvement occurred in all cases and persisted as long as the pellets were in place, but symptoms recurred in two to three weeks after the pellets were removed.

Twombly and Millen⁵ used 20 mg. pellets of estradiol implanted through a 10 gage needle. Each of the 43 menopausal patients treated received a total of one to three pellets given at intervals of one month. All except 1 of these women showed "moderate to marked improvement or complete cessation of symptoms," and the improvement continued for five to six months. Objective evidence of prolonged estrogen stimulation was demonstrated in endometrial biopsies and vaginal smears.

More recently Mishell⁶ reported his experience with 45 to 65 mg. pellets of crystalline estrogens obtained by extraction of pregnant mare's urine. One pellet was implanted in each case through a small incision just above Poupart's ligament. In a series of 19 menopausal women thus treated, all except 1 were relieved of hot flushes for periods of three to five months.

In connection with the pellet method of estrogen administration, mention should be made of a variation of this technic used by Salmon, Walter and Geist.⁷ They implanted loose crystals of α -estradiol benzoate through a skin incision 1 inch in length. Doses of 4 to 7 mg. were used. Clinical relief of menopausal symptoms in 10 patients and estrous changes in the vaginal smear persisting for sixty to ninety-eight days were reported. Later the same authors reported a

From the Department of Gynecology, Johns Hopkins University School of Medicine.

This study was made possible by a grant from the Rockefeller Foundation Fluid Research Fund.

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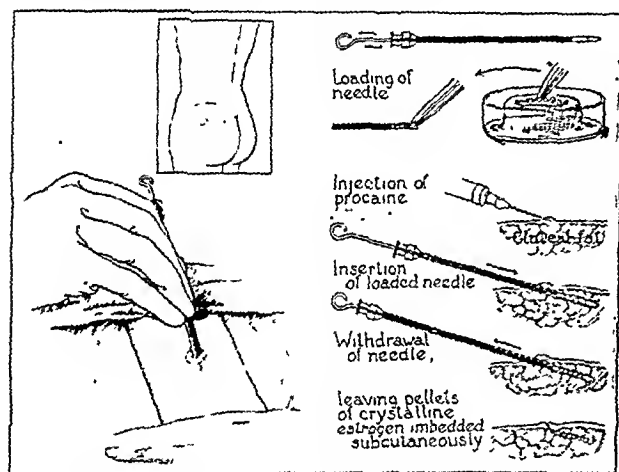
7. Salmon, U. J.; Walter, R. I., and Geist, S. H.: *Science* 90: 162 (Aug. 18) 1939.

series of 7 cases treated with the same technic but with larger doses varying from 25 to 50 mg. of crystalline α -estradiol or α -estradiol benzoate.⁸

The present study is concerned with the treatment of 45 menopausal patients in whom we have implanted theelin (estrone⁹) pellets subcutaneously. Preliminary observations in 21 of these cases have been previously reported.³

TECHNIC

As described earlier,³ our pellets are made by direct compression of pure crystalline estrogen in drilled, machine ground, steel plates. The pellets used are 1.83 mm. in diameter, 2 to 5 mm. in length and 5 to 10 mg. in weight. The estrogen pellets are sterilized in a dry steam autoclave at 250 F. under 15 pounds of pressure for thirty minutes. Implantations in our patients are made through a 12 gage hollow needle fitted with a stilet. The pellets are loaded into the pointed end of the needle with small forceps and the needle is passed through the skin over the gluteal region after procaine infiltration. Pressure on the stilet as



Technic of implantation.

the needle is withdrawn deposits the pellets in the subcutaneous tissues, as shown in the illustration. Sterile technic is, of course, observed throughout the implantation procedure.

DOSAGE

The number of implantations per patient has varied from one to five, the average number being one and one half. The average number of pellets per implantation has been eight; the average total weight of estrogen in each implantation was 40 mg. In some of the early cases considerably smaller doses were used, but during the past year a standard dose of 50 mg. has been used almost routinely. This usually requires six to eight of our tablets.

CLINICAL RESULTS WITH THEELIN (ESTRONE) PELLETS

In evaluating our results we have, as most other investigators, considered the relief of hot flushes to be the most definite criterion. Table 1 shows our clinical results with pellet implantation of crystalline theelin (estrone) pellets, and a comparison is made between

this method of therapy and others with which we have had experience. Of the 45 patients treated with theelin (estrone) pellets, 93.4 per cent considered the results satisfactory. In many of these patients hot flushes disappeared completely, though it is not to be inferred that such was invariably the case. However, in all these cases classed as satisfactory the flushes had decreased to the point at which the treatment was considered by the patient to be highly satisfactory. In most instances the improvement of flushes went hand in hand with an improvement in the patient's sense of well being. Improvement usually began within two weeks following implantation. The great advantage of the pellet method of administration of estrogenic hormone lies in the prolonged duration of the relief of symptoms. Our patients were relieved for an average period of sixteen and two-tenths weeks. The shortest term of relief following one implantation was three weeks and the longest sixty-five. It is probable that the latter patient spontaneously recovered from the menopausal syndrome while under estrogen therapy. None of those who had been previously treated with estrogens administered by hypodermic injections showed less improvement from pellets, and in most cases the degree of relief was definitely greater with pellet implantation.

The use of theelin (estrone) pellets has been remarkably free from unpleasant side effects. At the outset we felt that the introduction of such foreign bodies as our pellets would in certain cases give rise to tenderness, pain or other evidence of local inflammation. Our observations now extend over a period of nearly three years, and in no case has such a reaction been observed in our patients. With theelin pellets we have seen no instance of nausea, vomiting or other evidence of systemic, toxic reaction. In no instance has there been objective evidence of breast hypertrophy, chronic cystic mastitis or subjective complaints suggesting such changes. In 1 case, however, abnormal uterine bleeding did occur, consisting of scanty bleeding for one day appearing three weeks after pellet implantation. It is interesting to note that this particular patient had previously been subjected to roentgen ray castration because of prolonged functional bleeding.

COMPARISON WITH OTHER METHODS OF THERAPY

In order the better to evaluate the apparent advantages of the theelin (estrone) pellet method of therapy in the menopause we have thought it necessary to present for comparison our results with other therapeutic methods. As shown in table 1, we have treated 145 menopausal women with diethylstilbestrol administered orally. Of 74 patients taking a daily dose of 0.5 mg. or less, only 60.8 per cent were satisfactorily improved. That a larger dosage is more effective is demonstrated in the group of 71 patients, receiving 1 mg. or more of diethylstilbestrol a day, of whom 85.9 per cent showed satisfactory improvement. The greatest apparent success with diethylstilbestrol occurred in the group of 12 patients who received subcutaneous pellets in an average total dose of 53.5 mg. In all these patients the clinical results, with regard to hot flushes, were satisfactory. Thus it is seen that small doses of diethylstilbestrol given by mouth cannot be relied on as adequate but that in oral doses of 1 mg. or more a day or when given as subcutaneous pellets in average doses of 53.3 mg. diethylstilbestrol is reasonably efficient as compared with theelin pellets as far as the clinical relief of symptoms is concerned.

8. Salmon, U. J.; Geist, S. H., and Walter, R. I.: *Proc. Soc. Exper. Biol. & Med.* 43:424 (Feb.) 1940.

9. The crystalline estrogen used in this study was supplied as "Theelin" by Parke, Davis & Co. and as "Estrone" by Eli Lilly & Co.

However, when the undesirable side effects are considered, diethylstilbestrol suffers in comparison. When given in oral dosage adequate to insure satisfactory clinical results, diethylstilbestrol induced nausea in 15.5 per cent of the patients. Of those who received diethylstilbestrol pellets nausea, beginning within twenty-four hours after implantation and persisting for seven to ten days, occurred in 16% per cent. It is of interest to note that vomiting did not occur in these cases and that the nausea disappeared after seven to ten days in spite of the fact that the pellets were not removed. In addition to these toxic systemic reactions it is startling to find that abnormal uterine bleeding occurred in 36.3 per cent of women with intact uteri receiving 1 mg. or more a day orally. Of the 12 patients treated with diethylstilbestrol pellets 5 had undergone hysterectomy. In the 7 women with intact uteri abnormal bleeding occurred in 5. Even in cases treated with diethylstilbestrol orally in doses too small to insure clinical improvement the incidence of nausea and abnormal uterine bleeding exceeded that found with theelin pellets.

TABLE 1.—Subjective Improvement

Treatment	Cases	Satisfactory		Un- satis- factory	Per Cent Satis- factory	Per Cent Un- satis- factory
		Com- pletely	Par- tially			
Theelin (estrone) pellets (average 59.4 mg. per patient)....	45	34	8	3	93.4	6.6
Diethylstilbestrol pellets (average 53.5 mg. per patient)...	12	11	1	0	100.0	0.0
Theelin (estrone) crystals in aqueous suspension (5-25 mg. hypodermically).....	27	6	10	11	59.3	40.7
Oral diethylstilbestrol (0.5 mg. or less daily).....	74	22	23	29	60.8	39.2
Oral diethylstilbestrol (1.0 mg. or more daily).....	71	40	21	10	85.9	14.1
Oral naturally occurring estrogens* (3,000 international units daily).....	13	3	3	7	46.0	54.0
Phenobarbital.....	24	4	8	12	50.0	50.0

* Reed and Carnrick, "Estrogenic Hormone."

In fairness, however, it should be acknowledged that diethylstilbestrol is of the first importance in the investigative phase of menopausal therapy today. Its chief advantages are that it can be effectively administered orally and that it will probably be inexpensive. Since the discovery of diethylstilbestrol by Dodds and his co-workers¹⁰ in 1938 numerous clinical and laboratory studies have proved its high estrogenic potency, even when administered orally. Several investigators have reported it satisfactory in the treatment of menopausal patients. Because of the wide range of dosage employed, varying from 0.1 to 5.0 mg. even in a single study, and because of a lack of agreement as to the frequency of toxic reactions, additional data are needed before the true clinical value of this preparation can be determined.

Another group of patients were treated with theelin crystals in aqueous suspension¹¹ administered hypodermically in total doses of 5 to 25 mg. given in single injections of 5 to 10 mg. Satisfactory clinical results were obtained in only 59.3 per cent of 27 patients. A small group of 13 cases were treated with natural

estrogen¹² administered in the form of an oral tablet three times a day. The results were considered satisfactory in only 46 per cent.

Finally a group of 24 patients were treated with phenobarbital in doses of $\frac{1}{4}$ and $\frac{1}{2}$ grain (0.016 and 0.032 Gm.) three times daily. Just half of these reported

TABLE 2.—Relation Between Duration of Symptoms Before Treatment and Clinical Improvement After Treatment

Duration of Symptoms	Cases	Satisfactory		Unsatisfactory
		Completely	Partially	
Less than one year.....	20	95.0%	.....	5.0%
More than one year.....	25	60.0%	33.0%	8.0%

satisfactory results. It should be pointed out that the percentage of completely satisfactory results obtained with phenobarbital was quite low. Although sedatives have been justly replaced in a large measure by hormones in the treatment of menopausal symptoms, our results indicate that sedatives such as phenobarbital do give some relief in a goodly percentage of the cases and may be very useful in those cases which do not respond to endocrine therapy.

It has been our impression in dealing with menopausal women that those who are in what might be termed the acute phase of the menopause respond to treatment better than those who have complained of flushes and other symptoms for one, two or more years. One occasionally sees women complaining of flushes ten or more years after their last period. In addition to the flushes, such women often have developed a multiplicity of vague complaints. It appears that many of these patients have found their menopausal symptoms, which at first were real, a convenient expression of their neurotic natures. With the idea of determining whether this admittedly preconceived idea was correct, we divided the women into two groups, those whose symptoms had been present for less than a year and those in whom symptoms had been present for over a year. Table 2 shows the results. It is obvious from this table that the results in both groups were considered satisfactory in over 90 per cent but that 95 per cent of the patients who had had symptoms for less than one year acknowledged that the implantation had completely relieved them. On the other hand, of those who had complained

TABLE 3.—Relation Between Type of Menopause and Clinical Improvement After Treatment

Type of Menopause	Cases	Satisfactory		Unsatisfactory
		Completely	Partially	
Physiologic.....	26	73.1%	15.4%	11.5%
Surgical castration.....	14	53.7%	14.3%	.....
Irradiation castration.....	5	60.0%	40.0%	.....

for over a year, only 60 per cent admitted complete relief. We are inclined to interpret this as indicating that a certain amount of chronic invalidism had developed in many patients of the latter group which naturally could not be cured by endocrine therapy. This suggests to us the desirability of prompt treatment when menopausal symptoms develop before the woman becomes too firmly established as a hypochondriac.

10. Dodds, E. C.; Goldberg, L.; Lawson, W., and Robinson, R.: *Nature*, London 141: 247 (Feb. 5) 1938.

11. The theelin crystals in aqueous suspension were supplied as "Theelin" by Parke, Davis & Co. and as "Estrone" by the Abbott Laboratories.

12. The natural estrogen was supplied as "Estrogenic Hormone, Oral," by the Reed Carnrick Company.

We felt that it might be of interest to determine which type of menopause responded best to pellet implantation of estrone. Accordingly we divided the cases into three groups, the physiologic, the surgical and the irradiated group. Our results are shown in table 3. There were only 5 cases in the last group, and the figures are probably of little significance. Suffice it to say that all of the irradiated group obtained relief but that in 2 of the 5 the relief was only partial. The surgical castrates responded better than either of the other two groups. We are inclined to feel that the reason for this is that most of these patients were castrated in our clinic and were still in close touch with the clinic when their symptoms developed. Hence they were brought under treatment earlier, which we believe is an important factor in the success of treating menopausal women.

The question of the value of the vaginal smear in determining indications for and the results of treatment should be considered in view of the report of Papanicolaou and Shorr.¹³ These investigators lay great stress on the vaginal smear as a means of determining whether symptoms are truly menopausal or psychic in origin. They state that "the menopausal type of smear

TABLE 4.—*Abnormal Bleeding in Patients with Intact Uteri*

Treatment	Cases	Scanty	Profuse	Abnormal Bleeding
Theelin pellets (estrone).....	28	1	0	3.5%
Diethylstilbestrol pellets . . .	7	2	3	71.5%
Theelin crystals in aqueous suspension	14	1	1	14.3%
Oral diethylstilbestrol (0.5 mg. or less daily)	45	3	1	8.8%
Oral diethylstilbestrol (1.0 mg. or more daily)	44	6	10	36.3%
Natural estrogens (oral)	10	0	0	0.0%
Phenobarbital	16	0	1	6.3%

is invariably present after the menopause whether or not symptoms exist. In the latter instance it acquires special significance in that it furnishes an objective index of the symptomatic state." We cannot agree with this completely, for we have seen vaginal smears from untreated castrated women showing an abundance of pure large flat epithelial cells such as one usually finds in younger women with an abundance of estrogen. Of special interest was one woman of 30 who had been surgically castrated three years before. She was having typical severe hot flushes but her vaginal smear showed none of the characteristics of the so-called castrate smear. In general, however, it is true that most symptomatic menopausal women have smears suggesting estrogen deficiency and under the influence of the implanted estrone the smears become of the estrogenic type, but we have frequently noted relief from symptoms without any change in the vaginal smear. Frequently symptomatic relief preceded any change in the vaginal smear and we are inclined to believe that the dosage necessary to relieve the symptoms in many women is less than is required to alter the vaginal epithelium. We do not feel that it is necessary for the practitioner who is treating menopausal symptoms to follow the vaginal smears. In fact, to be guided entirely by the smears would in some instances be misleading. It is a better rule to be guided by relief of symptoms.

13. Papanicolaou, G. N., and Shorr. *Ephraim: Am J. Obst. & Gynec.* 31:806 (May) 1936.

UTERINE BLEEDING

The production of uterine bleeding in postmenopausal women has frequently been noted by several investigators in the field of estrogenic therapy; hence we are interested in the effect of the implanted pellets of estrone as regards bleeding in the women with intact uteri. Table 4 gives our results. It might be well to define "abnormal bleeding" as recorded in this table. We have considered abnormal bleeding to be intermenstrual bleeding or excessive menstrual bleeding in those patients who were still having their periods. In women who had ceased menstruating for one year or more, any show of blood was considered abnormal. There were 28 cases in the group treated with estrone pellets in which the uteri were intact. Of these, only 1 bled scantily. One wonders whether this bleeding was coincidental or caused by the hormone. As a control, one might consider the 16 cases treated only with phenobarbital. One of these women also bled. This bleeding was certainly coincidental to the treatment but it illustrates the well known likelihood of menopausal bleeding to occur spontaneously. Hence it would seem fair to judge from the results that there is no evidence that the estrone pellets were responsible for bleeding in this group. Twombly and Millen,⁵ on the other hand, found that out of 12 patients treated with pellets of α -estradiol 9 bled. From this they justly concluded that the pellet treatment with α -estradiol is contraindicated in women with intact uteri. No such contraindication would seem to exist when pellets of estrone are used. In a small group of 7 patients with intact uteri treated with diethylstilbestrol pellets, 5 bled. Although this is a very small series, the incidence of bleeding is so great that it would seem to indicate that the use of pellets of diethylstilbestrol is definitely contraindicated in women with intact uteri. The table indicates also that when diethylstilbestrol is administered by mouth in sufficient dosage to make relief of symptoms reasonably sure (1 mg. or more a day) bleeding occurred in 36.3 per cent. Estrone crystals were given in aqueous solution in 14 cases. In 2 there followed abnormal bleeding, whereas in the small group of 10 to whom naturally occurring estrogens were administered by mouth, none bled. It is noteworthy that the therapeutic results in this small group were not very satisfactory.

The importance of using an estrogen which does not cause bleeding at or after the menopause cannot be too strongly stressed, for when the bleeding occurs one cannot be certain whether it is due to the endocrine treatment or is dependent on some serious lesion such as corpus carcinoma and the decision can be made only by curettage. Obviously a preparation which will not cause bleeding is of much advantage, and estrone administered by pellet implantation would seem to fit this category.

In searching for an explanation of the frequent bleeding with diethylstilbestrol, we have called on our experience in treating children for gonococcal vaginitis. It would seem that diethylstilbestrol is more potent in its hormonal action as regards growth stimulation than the natural hormone. For instance, we frequently noted excessive uterine growth when the children were treated with diethylstilbestrol, and this was never noted when the natural hormone was used in comparable dosage by weight, even though the local action of the natural estrogen on the vaginal mucosa was just as effective. The bleeding so frequently noted when dieth-

ylstilbestrol is used for menopausal symptoms would seem to depend on this same growth stimulating action on the uterus, for when these bleeding uteri are curetted we usually see evidence of endometrial proliferation in the production of the Swiss cheese glandular pattern and frequent mitoses in the glandular epithelium.

Since the question of the carcinogenic action of estrogenic substance has been raised, it might be in order to consider the possibility of such action when estrogenic pellets are implanted. As already stated, evidence of benign endometrial proliferation was frequently noted when diethylstilbestrol was used, but we have no histologic evidence of this when pellets of estrone were used. Furthermore, we have no clinical evidence from our series that pellet implantation of either estrone or diethylstilbestrol was responsible for any malignant change. Lipschütz and Vargas¹⁴ produced "fibromas" in the uteri of guinea pigs by repeated injections of estradiol and even more effectively produced "fibromas" when tablets of estradiol were implanted. The tumors so produced were all benign and retrogressed when treatment was discontinued. Nelson¹⁵ also produced uterine fibromas in guinea pigs by injecting large amounts of estrogenic hormones. Perloff and Kurzrok¹⁶ implanted pellets of estradiol benzoate in guinea pigs and produced uterine fibromas, but they were unable to do so when pellets of estrone were used. Our clinical experience with pellet implantation causes us to doubt whether these interesting laboratory observations have any clinical bearing; but, if they do, they would seem to indicate that estrone is the weakest growth stimulator of the various estrogens.

LABORATORY AND OBJECTIVE EVIDENCE OF ESTROGENIC ACTIVITY INDUCED BY PEL- LET IMPLANTATION OF ESTRONE

When estrogen replacement therapy is adequate, it is possible to demonstrate certain objective evidence of the presence of the replacing estrogen and also evidence of its physiologic activity, as indicated by changes in the genital organs and by the tendency toward decrease of the pituitary gonadotropic hormone. Such evidence is essential in proving the effectiveness of any estrogenic substance and the efficiency of any particular method of estrogen administration. Therefore in a considerable number of our patients we have made periodic determinations of the urinary levels of estrogenic substance and gonadotropic hormone before and during therapy and in certain cases studied vaginal biopsies. Repeated urinary estrogen assays were done in 21 cases. In about three fourths of these cases no estrogen was detected before treatment. In the remaining cases the urinary estrogen excretion in twenty-four hours before treatment was never more than 5 rat units, which in our laboratory represents the lower limit of normal for a menstruating woman. After pellet implantation, however, all cases have shown definite and persistent increase in the urinary estrogen, the average post-treatment level being 10 rat units in twenty-four hours. In about one fourth of the cases the level has been above 15 rat units per liter, which in our laboratory is close to the upper limit of normal for menstruating women. The average observed duration of the estrogen increase in the urine

has been twenty to twenty-four weeks, but in 1 case the elevation persisted for forty weeks.

Urinary follicle stimulating hormone levels have been followed before and during therapy in 35 instances. In 20 the level before treatment was 25 rat units per liter or more while in 15 cases no elevation was detected. Only 50 per cent of those showing a pretreatment elevation of the follicle stimulating hormone showed a persistent absence of follicle stimulating hormone following pellet implantation. However, in the 10 cases in which suppression did occur it was observed to persist for an average period of twenty-one weeks and in 1 case for forty weeks.

As previously reported, vaginal biopsies in 10 patients showed uniform stimulation of the vaginal mucosa appearing within two weeks and persisting as long as twenty-one and a half weeks after pellet therapy.

CONCLUSIONS

We believe that the pellet implantation of crystalline estrone is the most effective method yet devised of combating the menopausal syndrome, being satisfactory in 93.4 per cent of our cases.

The implantation of pellets as here described is a very simple procedure.

The hormone administered by implantation is effective over a longer period of time than when administered by any other method.

Implanted crystalline estrone pellets produced no untoward side effects in contrast to pellets of diethylstilbestrol (or estradiol reported by others).

The treatment was more completely effective in cases in which the symptoms were present for less than a year, which to us suggests the value of early treatment before the neurasthenic tendencies of the patient are developed. There is, of course, the possibility that the symptoms persist for more than a year only in the more severe cases and hence they are more refractory to treatment.

We do not believe that the vaginal smear is an altogether dependable indicator of the necessity of estrogen treatment in the menopause nor is it of any great clinical value as an indicator of the effectiveness of the treatment of the symptoms. Although we feel that laboratory determinations of urinary estrogenic levels and gonadotropic hormone levels are valuable in evaluating a new therapeutic method, such determinations are not necessary in order to carry out satisfactory therapy in the individual patient.

The Basis of Civilization.—Science has thus become the basis of civilization and is the primary factor in promoting its growth. Just as earlier society was based on agriculture and local trade, so modern communities are built on the scientific foundation which makes possible rapid transportation and communication, the preservation and distribution of food and adequate sanitation. With only primitive knowledge of metallurgy, mechanics, electricity, chemistry and hygiene, our cities could not exist, and, with them gone, country life also could have only a primitive form. Science has thus proved its practical strength, and the indications are that the future of mankind lies in the hands of those who guide their actions by carefully acquired scientific knowledge. With science and its correlated industries, there is every reason to anticipate a continuation of the rapid growth and development of civilization, except in those regions and periods where political unrest turns men's attention to less scientific matters.—Compton, Arthur H.: *Science, Religion and a Stable Society*, *Assn. Am. Coll. Bull.* 26:206 (May) 1940.

14. Lipschütz, Alexander, and Vargas, Luis: *Lancet* 1:1313 (June 10) 1939.

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RENAL COMPLICATIONS FOLLOWING
SULFATHIAZOLE THERAPY

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Since the introduction of the thiazole derivatives of sulfanilamide by Fosbinder and Walter¹ in 1939, renal complications following the use of sulfathiazole have been observed in the experimental animal and to a limited extent in the treated patient. Only 23 instances have appeared in the literature in which sulfathiazole produced apparent renal damage in the human being; in 21 instances there was hematuria, in 7 there was nitrogen retention, and in 2 sulfathiazole was the probable cause of death.

Garvin² treated 54 patients for pneumonia, using 10.0 Gm. of sulfathiazole daily, a dose necessary to maintain a blood sulfathiazole level of 5.8 mg. per hundred cubic centimeters. Of these patients 14.8 per cent had gross or microscopic hematuria. One developed renal colic. Abernethy,³ treating 31 patients with pneumonia, used 40 Gm. of sulfathiazole orally over a period of seven to ten days. One developed hematuria and another showed oliguria and nitrogen retention. Wagoner and Hunting,⁴ in the management of 55 patients, administered sufficient sulfathiazole to keep the blood level between 4.0 and 6.0 mg. per hundred cubic centimeters for a period of five days. Only 1 patient developed hematuria. Flippin and his co-workers,⁵ in treating 100 patients with 30 Gm. of sulfathiazole in four days, reported 9 instances of microscopic hematuria. In no patient was nitrogen retention or oliguria noted. Culp⁶ treated 30 patients having urinary tract infections, using a large initial dose and 1 Gm. of the drug every six hours thereafter for five to ten days. No oliguria or hematuria was noted. Knoll and Cooper⁷ used 22 Gm. of sulfathiazole in five days while treating a man aged 81 for pneumonia. The blood sulfathiazole level was 6.7 mg. per hundred cubic centimeters. The patient developed gross hematuria, a blood nonprotein nitrogen of 63 mg. per hundred cubic centimeters and oliguria, all of which returned to normal in four days after discontinuation of the drug. No permanent renal damage was apparent. Horack⁸ treated a woman aged 77 for pneumonia. Hematuria and a significant rise in the blood urea nitrogen were observed within eighty hours. Following the withdrawal of the drug there was little improvement of renal function, and the patient died on the ninth hospital day. At necropsy the kidneys were pale and swollen. On sec-

tioning, streaks of gritty material could be seen and felt in the region of the medulla. The tubules were dilated and the pyramids were obstructed by large crystalline masses. Lowenberg, Sloane and Chodoff,⁹ however, reported that a woman aged 49 was given 52 Gm. of sulfathiazole in ten days without clinical signs of renal damage. The blood sulfathiazole level ranged between 5 and 7.6 mg. per hundred cubic centimeters. At necropsy the bladder, ureters and tubules were packed with crystals. There was no pathologic evidence of parenchymal damage. In this case the presence of crystals in the urinary tract and even crystals in the tubules themselves did not necessarily mean that damage to the kidneys had taken place. Sulfathiazole may or may not have been a factor contributing to the death of the patient.

Many observations conducted on experimental animals to study the nature of the renal damage from this drug showed lesions to be reproducible and frequently irreversible. Rake, van Dyke and Corwin¹⁰ found that 77 per cent of mice ingesting sulfathiazole to the extent of 2 per cent of their diet died within four weeks. At autopsy, crystals were present in the urinary tract from the proximal convoluted tubules to the urethra. Bowman's capsule was dilated and occasionally filled with blood. The renal tubules also were dilated, were filled with crystals and showed definite peritubular leukocytosis and occasionally tubular necrosis. Half of the animals had definite concretions in the pelvis or ureters. The damage to the kidneys seemed to the authors to be of two distinct types: 1. There was mechanical blocking of the urinary passage, producing either obstruction to the renal tubules with a resultant tubular hydronephrosis or obstruction to the ureters with a ureteropelvic hydronephrosis. 2. There seemed to be a primary toxic effect on the glomeruli and tubules directly, as shown by hemorrhage into Bowman's capsule and changes in the glomeruli and glomerular basement membrane.¹¹

In rats, in contrast to mice, sulfathiazole is less toxic as far as renal injury is concerned, probably because of the rapid rate of metabolism of sulfathiazole in this animal.¹⁰ Sulfathiazole produced renal calculi rarely in monkeys, owing probably to this animal's normal rapid excretion of the drug.¹⁰ Climenko, McChesney and Messer¹² showed that the continued oral administration of sulfathiazole to dogs produced mild impairment of renal function. These changes were reversible, returning to normal within forty-eight hours following the withdrawal of the drug. Gross, Cooper and Scott¹³ clearly demonstrated tubular blockage following sulfathiazole administration in white rats, using frozen sections and polarized light to visualize the crystals.

The mechanism of the renal damage produced by the sulfonamides varies. Wood¹⁴ reported a case in which sulfanilamide was administered, with development of

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an acute hemolytic anemia and subsequent death in uremia. At autopsy the convoluted and collecting tubules were packed with pigmented casts, which reacted positively to the iron stain. This type of renal damage is similar to that found in blackwater fever.



Fig. 1 (case 1).—Section of kidney in which there is thickening of the glomerular basement membrane. Adjacent to Bowman's capsule is an area of lymphocytic infiltration.

Sulfathiazole has not produced renal damage in this fashion to our knowledge. Antopol¹¹ pointed out that changes in the renal parenchyma could take place with or without urolith formation in animals receiving sulfapyridine and that the crystal formation in the tubules may either precede or follow tubular damage. That the drug is irritating in itself is shown by the acute gastritis which follows oral administration and the hemorrhagic reaction in the bowel which follows rectal instillation. Histologic changes were produced with sulfathiazole in the kidneys of the monkey which were similar to those found in man. In many of the animal experiments much larger doses than those used for therapeutic purposes in man were administered.¹⁵

In view of the relatively few reported instances of renal damage by sulfathiazole in man, the indiscriminate use of the drug by many, and the possibility that most patients who receive the drug are not properly studied for evidences of renal changes, it was considered warranted to report 6 cases from Charity Hospital in which renal injury developed following the administration of sulfathiazole.

REPORT OF CASES

For brevity these cases are condensed, only the data relating to discussions in the paper being presented.

CASE 1.—E. P., a Negro woman aged 37, married, a laundress, entered Charity Hospital on Sept. 19, 1941 complaining of chest pain of five days' duration. She died on September 25.

She presented a typical clinical picture of acute pericarditis and left fibrinous pleuritis with nausea and vomiting of five days' duration and a history of limited intake of fluids and food. The liver was moderately enlarged and soft, and the right kidney was large and movable. There was no ascites or edema. Ten days prior to admission she had a perirectal abscess drained.

There was moderate anemia and leukocytosis. The urine had a specific gravity of 1.014, 4 plus albumin and no erythrocytes.

Five hours after her admission on September 19, 3 Gm. of sulfathiazole was administered by mouth. In the following two days she received 6 Gm. of sulfathiazole orally each day. On September 22 she was given three doses of 40 cc. of 5 per cent sulfathiazole intravenously. Each day on which sulfathiazole was given, 2,000 cc. of intravenous fluids was administered in addition to that drunk. On September 22 the drug was stopped because of oliguria and the presence of red cells and sulfathiazole crystals in the urine. In three days she had received a total of 21 Gm. of the drug, 6 Gm. of which was given intravenously. Repeated urine examinations revealed a specific gravity of 1.014, 4 plus albumin and 10 to 15 erythrocytes per high power field. No casts were reported. On September 21 the blood urea nitrogen rose to 101 mg. per hundred cubic centimeters, the blood sulfathiazole was 21 mg. per hundred cubic centimeters and the carbon dioxide combining power was 22 volumes per cent. By September 25 her fluid output was only 5 cc. On this day her temperature rose to 102 F., the pulse rate was 180 per minute, the respiratory rate was 45 per minute and the patient died.

On postmortem examination, the pericardial cavity contained 20 cc. of purulent fluid, and shaggy fibrinous adhesions were present between the visceral and the parietal pericardium. The left pleural space contained 100 cc. of purulent exudate. The kidneys were enlarged, the right weighing 390 Gm. and the left 280 Gm. They were smooth, swollen and pale and showed no hemorrhage or crystals. The pelvis and ureters were not dilated. The bladder showed numerous submucosal hemorrhagic areas in the region of the trigone.

On microscopic examination¹⁶ the kidney capsule was thin. The glomeruli were slightly decreased in size, appeared somewhat acellular and showed considerable thickening of the basement membranes. The glomerular spaces were dilated and contained a moderate amount of eosinophilic granular material. A few hyalinized glomeruli were noted in the cortex. The tubules were all dilated, and many contained an eosinophilic granular amorphous material. This was most pronounced in

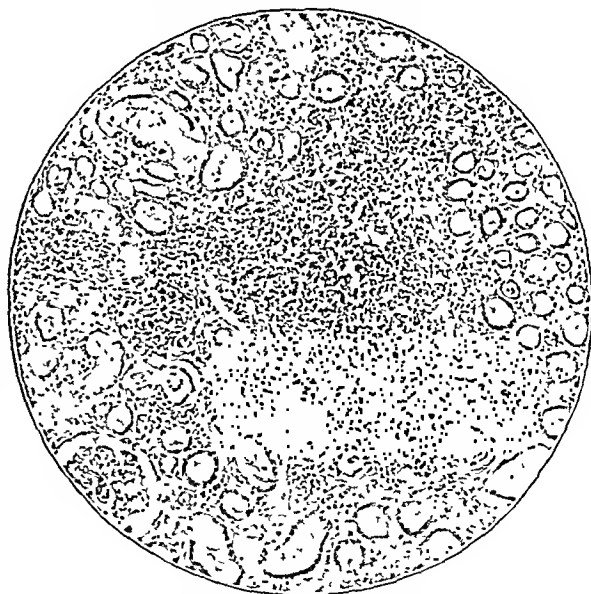


Fig. 2 (case 1).—Section of kidney in which the tubules are dilated. An area of leukocytic infiltration and hemorrhage is seen. The tubular epithelium is flattened. There is some interstitial edema and fibrosis.

the convoluted tubules, which were lined by a flattened type of epithelium. There was an increase in the interstitial fibrous tissue associated with slight edema. There was a diffuse lymphocytic infiltration throughout the cortex (figs. 1 and 2).

15. Sunderman, F. W.; Pepper, D. S., and Benditt, Eleanor: Sulfathiazole in Blood and Urine, *Am. J. M. Sc.* 200:790-795 (Dec.) 1940. 16. Dr. Joseph Ziskind of the Department of Pathology, Tulane University Medical School, evaluated the microscopic sections.

On the first examination, no mass in the right upper quadrant was found. This was detected only after sulfathiazole was started and gave the examiners the impression that it was a right kidney that had become enlarged and that the sulfathiazole was responsible for this acute enlargement. Because of the acuteness and severity of the patient's illness, sulfathiazole was administered as described without the state of renal function having been previously determined. After having received 18 Gm. of sulfathiazole in three days, she was found to have a blood sulfathiazole level of 21 mg. per hundred cubic centimeters, oliguria (as little as 5 cc. a day) and a retention of nonnitrogenous products. The patient died shortly thereafter. Since no previous renal function studies were made, it is impossible to be certain that there was no antecedent renal damage. The history suggested the absence of any chronic renal disease. It was thought that, even though the sulfathiazole may not have been responsible for the

be done to learn the state of renal function before sulfathiazole is administered. 3. Sulfathiazole should probably not be given to a patient who is dehydrated or to one with severe renal damage. 4. Fluids should be forced while the drug is being administered, and oliguria, hematuria, a unilateral enlarging kidney or impaired renal function (determined by frequent urinalyses and renal function studies) should be indications to stop the drug. 5. Tissues should be studied by frozen section if crystals are to be found.

CASE 2.—A. A., a Negro woman aged 36, married, a housewife, was admitted to Charity Hospital on July 29, 1941 and died on August 2. Two weeks prior to admission to the surgical service an acute right salpingitis developed which had resulted in a pelvic abscess and diffuse peritonitis by the time of admission.

There were leukocytosis, increased sedimentation rate, a trace of albumin and many casts in the urine. An exploratory laparotomy was performed and the diagnosis confirmed.

On return to the ward the patient was given 5 Gm. of sodium sulfathiazole in 1,000 cc. of saline solution by the intravenous route. The following day the same total dose was repeated in divided amounts along with the intravenous administration of fluids. No sodium bicarbonate was administered. On Aug. 1, 1941, a catheterized specimen of urine was grossly bloody. The nonprotein nitrogen was 38 mg. per hundred cubic centimeters and the carbon dioxide combining power was 30 volumes per cent. She developed oliguria, abdominal distention, a temperature of 103 F. and signs of pulmonary edema. The latter was treated by sedation, phlebotomy, tracheal aspiration and 50 per cent dextrose solution intravenously. The patient died, August 2, with acute respiratory distress.

On postmortem examination the peritoneal cavity showed signs of diffuse peritonitis. The kidneys were pale, tense and swollen. The right kidney weighed 200 Gm. and the left 240 Gm. Sectioning produced a gritty sensation. The cut surfaces were pale and felt sandy and rough. The calices and pelves of both kidneys contained pale yellow, gritty crystals, which tended to clump together. The left ureter was dilated and congested, and its lumen contained a plug of crystals which completely blocked the ureter at the trigone of the bladder.

Microscopically the kidneys showed considerable distention of the capsular spaces with small glomerular tufts. Within these spaces there was noted much eosinophilic granular material. There was slight thickening of the basement membrane with no proliferation of the endothelium. The tubules were generally greatly dilated, especially in the cortical area. The cells lining the tubules were flattened and more atrophic than normal. The convoluted tubules showed considerable eosinophilic granular material. This was also found in the collecting tubules, but in minimal quantities. There was very slight interstitial edema. Occasionally small groups of lymphocytes were seen between the convoluted tubules. The capillaries were congested, and an occasional intertubular hemorrhage from these vessels was noted (fig. 3).

The patient showed signs of renal damage after the intravenous administration of 10 Gm. of sodium sulfathiazole in forty-eight hours. The hematuria, oliguria, azotemia and acidosis all pointed to renal involvement. Poor renal excretion may have been due to renal irritation from the massive peritonitis, to shock secondary to the infection as well as to the operation itself, and to dehydration due to fever, vomiting, catharsis and lack of administration of sufficient amounts of fluid. The delayed excretion as well as the intravenous administration of the drug would all tend to produce a high blood sulfathiazole level and a subsequent hyperacetylation of sulfathiazole in the liver and other organs of the body. Sunderman, Pepper and Benditt¹² have shown that the acetyl derivative of sulfathiazole is only one tenth as soluble in urine as is the free form of the

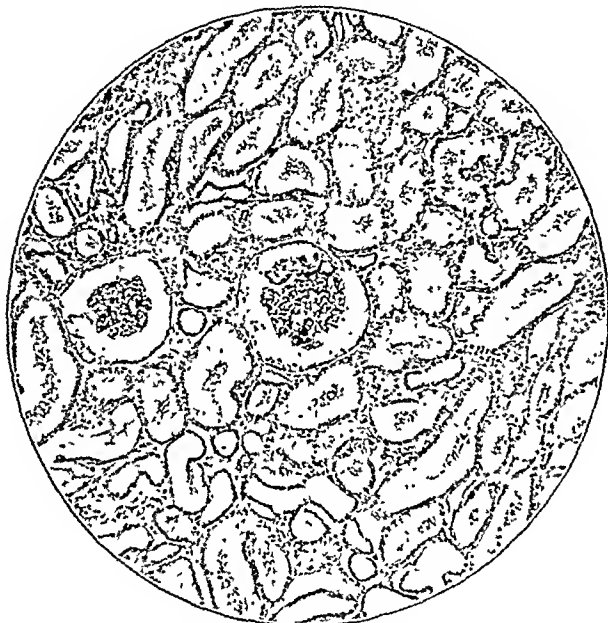


Fig. 3 (case 2).—Section of kidney in which the tubules and Bowman's space are dilated and an eosinophilic granular material is in their lumens. The free borders of the tubular epithelium are frayed and ragged. There is some thickening of the glomerular basement membrane.

primary renal damage, it probably produced the final oliguria and uremia.

At necropsy, no evidence of uremic pericarditis was seen. Frozen sections of the pericardium and myocardium were made, as it was felt that crystal formation in the heart muscle or pericardium itself could be a factor contributing to the pericarditis. No crystals were found. Frozen sections of the kidneys, however, showed the presence of crystals which completely filled and obstructed the renal tubules. Paraffin section of these organs stained with hematoxylin and eosin revealed no crystal formation. The tubules were dilated and showed signs of tubular degeneration and other signs of sulfathiazole damage.¹¹

Several facts may be learned from this case: 1. Before giving sulfathiazole, one must be sure that the patient has not already taken the drug without the knowledge of the doctor. The high blood level of sulfathiazole may have been due to use of the drug before admission to the medical wards. If in doubt, a blood sulfathiazole determination should be made before the drug is administered. 2. Renal function tests should

drug and that both are half as soluble in urine of p_H 5.6 as in urine of p_H 7.6. Recently observations by Curtis and Sobin¹⁷ corroborated this. Schwartz, Flippin, Reinhold and Domm,¹⁸ on the other hand, found that alkalization decreased the tendency toward urolith formation but little. Administration of sodium bicarbonate to this patient during sulfathiazole therapy probably would have lessened crystal formation in the kidney and ureteropelvis, especially since she showed a low blood carbon dioxide combining power. Necropsy showed renal damage which was comparable to that described by Antopol.²² The left hydronephrosis with urolith formation illustrates the mechanical damage to this patient. Although crystals were seen and felt grossly at the autopsy table in these kidneys, routine paraffin sections did not reveal their presence as they were dissolved out while the sections were being prepared. Frozen sections were not made. Sadusk, Waters and Wilson¹⁹ described 2 cases similar to this with calculi blocking the ureterovesicular orifice, with tubular dilatation and vacuolization and congestion of the glomerular tufts following the administration of sulfapyridine.

CASE 3.—C. G., a Negro woman aged 47, married, a housewife, entered Charity Hospital on Sept. 29, 1941 complaining of fever of three weeks' duration. She died on November 2.

On September 5 the patient contracted an infection of the upper respiratory tract which progressively descended, resulting in bronchopneumonia and right and left ventricular congestive heart failure. The physical findings supported the diagnosis.

The blood and urine examinations were normal. There was no gross or microscopic hematuria. Laboratory studies revealed a phenolsulfonphthalein excretion of 70 per cent in one hour, an antecubital venous pressure of 26 cm of water, a decholin circulation time from arm to tongue of fifty seconds and an ether circulation time from arm to lung of ten seconds.

During the first thirteen days of hospitalization she received 62 Gm of sulfathiazole by mouth. No sodium bicarbonate was given. On October 13 she complained of bilateral lumbar pain and an inability to urinate for the preceding sixteen hours. Urethral catheterization recovered a few drops of grossly bloody urine which was packed with sulfathiazole crystals. The blood pressure was 150 systolic and 90 diastolic. The blood sulfathiazole was 8 mg. per hundred cubic centimeters. Ureteral catheterization was done immediately, and when the catheters were passed a gritty sensation suggested the presence of numerous sulfathiazole crystals. There was no excretion of indigo carmine from either catheter in twenty minutes. The patient returned to the ward with a blood pressure of 82 systolic and 48 diastolic. In the first forty-eight hours the fluid intake was 8,500 cc. and the output was 780 cc. In the following ten days she received daily 4,000 cc. of fluids, 50 cc. of 50 per cent dextrose solution, 24 Gm. of sodium bicarbonate and 1½ grains (0.1 Gm) of digitalis. During this time the ureteral catheters were irrigated every two hours with warm isotonic solution of sodium chloride. In the twelve days following her hematuria the erythrocytes and sulfathiazole crystals disappeared from the urine and the blood urea nitrogen rose from 10 to 60 mg per hundred cubic centimeters. The patient was doing fairly well when she unexpectedly died on November 2, just twenty-one days after the onset of the hematuria.

At autopsy, the right kidney weighed 210 Gm and the left kidney 200 Gm. The capsules stripped with ease, revealing a fairly smooth purple surface which showed an occasional granular area in the region of the medulla. The cortex mea-

sured 0.7 cm. in thickness. The line of demarcation between the cortex and the medulla was distinct. The calices and pelves showed no abnormalities.

Microscopically the kidneys showed occasionally small scars just beneath the capsule, within which were a few atrophic tubules and occasional lymphocytes, plasma cells and large mononuclear cells. The glomeruli varied in size, most of them appearing smaller than normal. There was no proliferation of the endothelial or capsular cells, but the basement membranes were slightly thickened. Here and there the afferent arterioles showed thickening and hyalinization. There was moderate distention generally of the glomerular spaces, which contained in most instances an eosinophilic granular material. Moderate distention of the tubules, especially in the cortex, was noted. Many of the cells lining the convoluted tubules showed fraying of the free borders and albuminous degeneration. These tubules contained within their lumens an eosinophilic, granular amorphous material. Occasionally degenerating cells were noted in the lumens. A similar precipitate was present in the collecting tubules and some of Henle's loops but was not as well defined as in the proximal and distal convoluted tubules. There was

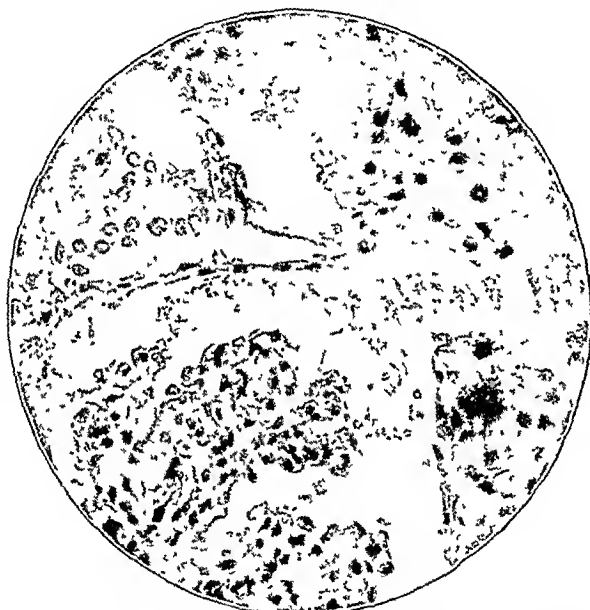


Fig. 4 (case 3).—Section of kidney in which Bowman's space contains an eosinophilic granular material. There is some thickening of the glomerular basement membrane.

not much separation of the tubules by interstitial edema. An occasional small focal area of lymphocytes and polymorphonuclear leukocytes could be seen in the peritubular tissues. This, however, was not constant (fig. 4).

The patient received 62 Gm. of sulfathiazole orally in twelve days, at which time backache heralded the onset of renal complications. Anuria quickly followed. The granular sensation felt while the ureteral catheters were being passed gave evidence of the presence of crystals in the ureters, and examination of the urine revealed typical crystals of acetyl sulfathiazole. If one assumes that the catheters were patulous, the inability of the kidney to excrete urine or indigo carmine through these catheters indicates a damage or block within the kidney itself and not in the extrarenal passages. Peterson and Finland²⁰ reported a case in which crystals formed in the ureteral catheters during catheterization, causing complete obstruction to the urine outflow. When intrarenal obstruction or damage has taken place, ureteral catheterization and irrigation of the ureters

17. Curtis, A. C., and Sobin, S. S.: The Solubility of Acetylsulfapyridine and Acetylsulfathiazole in the Urine, *Ann. Int. Med.* 15: 884-889 (Nov.) 1941.

18. Schwartz, Louis; Flippin, H. F.; Reinhold, J. G., and Domm, A. H.: The Effect of Alkali on Crystalluria from Sulfathiazole and Sulfadiazine, *J. A. M. A.* 117: 514-515 (Aug. 16) 1941.

19. Sadusk, J. F.; Waters, Levin, and Wilson, Dwight: The Treatment of Anuria Due to Sulfapyridine Calculi, *J. A. M. A.* 115: 1968-1973 (Dec. 7) 1940.

20. Peterson, O. L., and Finland, Maxwell: The Urinary Tract in Sulfonamide Therapy, *Am. J. M. Sc.* 202: 757-759 (Nov.) 1941.

and pelves cannot be expected to relieve the anuric patient. Such a procedure will, however, clear the extrarenal passages and will allow free flow of urine when diuresis begins. Carroll, Shea and Pike²¹ have shown that sulfathiazole crystals dissolve best in distilled water at 107 F. Warm distilled water would probably have been superior to the warm physiologic solution of sodium chloride used in this patient. Dourmashkin and Worton²² stated, in regard to sulfapyridine urolithiasis, that timely ureteral catheterization may be life saving. This is true only if there is little intrarenal obstruction and not when intrarenal blockage is primary. The latter must be treated by forcing fluids, sodium bicarbonate and diuretics.

At necropsy the kidneys of this patient were not pale, swollen or filled with sulfathiazole crystals as were the kidneys of the previous patient, who showed evidence of acute sulfathiazole injury. Instead, these kidneys were those of subacute damage in which injury had been inflicted more than twenty-one days previous to her death. It is possible that during these twenty-one days any crystals that may have been present were dissolved and excreted.

CASE 4—E. B., a Negro woman aged 32, married, a housewife, entered Charity Hospital on Sept. 22, 1941 complaining of a cough of fourteen days' duration. She was discharged on October 22.

On September 8 she noted a dry cough, headache, slight fever and pain in the chest, which were followed by definite clinical evidence of lobar pneumonia.

There were moderate anemia and leukocytosis. The urine had a specific gravity of 1.014, 2 plus albumin and occasional pus cells and erythrocytes.

On September 22 sulfathiazole was started by giving 2 Gm immediately, 2 Gm in four hours and 1 Gm every four hours orally thereafter. No sodium bicarbonate was given. A soft, neutral diet was supplied. On September 25, after receiving 16 Gm of the drug, she complained of a constant, dull, bilateral backache and an inability to urinate for twelve hours. Twenty cc of bloody urine loaded with sulfathiazole crystals was obtained by urethral catheterization. The flat plate of the abdomen at this time showed no evidence of radiopaque urinary calculi. Ureteral catheters were passed and a gritty sensation was noted as the catheters were guided into the pelvis of the kidneys. Five cc of bloody, granular urine was drained from each pelvis. The pelvis were irrigated with warm isotonic solution of sodium chloride until no more crystals were obtained. Intravenous indigo carmine appeared in weak concentration in both catheters at the end of thirty minutes. The blood urea nitrogen was 28 mg per hundred cubic centimeters, the carbon dioxide combining power 58 volumes per cent and the blood sulfathiazole 107 mg per hundred cubic centimeters. The patient was treated with 3,500 cc of fluid daily, an alkaline-ash diet, 40 Gm of sodium bicarbonate daily and irrigation through the ureteral catheters every two hours for seven days. On September 26 the urine output was only 25 cc. The output during the next four days was 470, 410, 835 and 2,025 cc respectively. By the time of her discharge on October 20 there were no erythrocytes in the urine. The urea clearance was 100 per cent and the phenolsulfonphthalein excretion 70 per cent in the first hour and 5 per cent in the second. The blood urea nitrogen was 8 mg per hundred cubic centimeters.

The course in this case resembled that of the previous one in that headache, intrarenal suppression of urine, hematuria, crystalluria and azotemia developed after

the oral administration of the drug. In contrast to the previous patient, however, she received only 16 Gm of the drug in three days. The blood sulfathiazole level was not excessive. Following alkalization, ureteral catheterization and diuresis, recovery took place in five days. The criteria for recovery used in this case was the absence of hematuria, a return to a normal urine output and the existence of normal renal function. The problem of the administration of sulfathiazole to a patient with evidence of a preexisting renal lesion is presented by this patient. Before sulfathiazole was given a routine urine examination showed 2 plus albumin and an occasional erythrocyte. This may have been secondary to her pneumonia, as she had no history or other signs of nephritis. Sadusk, Blake and Seymour²³ stated that persons with heart failure or renal damage retained the drug with a subsequent high blood level and a high degree of acetylation which was probably the result of continuous recirculation through the liver. It would seem then that any condition which would increase the acetylation and hence augment the insolubility of sulfathiazole would be a contraindication to the use of the drug. The renal function was not sufficiently impaired, even if there was previous renal disease, to produce an accumulation of sulfathiazole in the blood, as the blood level was only 107 mg. per hundred cubic centimeters. On discharge the patient showed no evidence of impairment of renal function. The urea clearance test, blood urea nitrogen level and phenolsulfonphthalein excretion tests were within normal range. Before catheterization the patient showed negative roentgenograms of the kidney regions. A few moments later, however, a gritty sensation was felt as the ureteral catheters were guided into place. These crystals were not roentgenographically visible. Uroliths of sulfathiazole are invisible unless infiltrated with calcium, in which case they can be seen by x-ray examination. This patient illustrates the success that usually follows treatment of the renal damage.

CASE 5—R. B., a white man aged 54, married, entered Charity Hospital on Sept. 6, 1941 with the complaint of inability to urinate of thirty-six hours' duration. He was discharged on September 24.

Fourteen days previous to entrance he developed a cough, sore throat and general malaise, which was accompanied by painful joints, chills and fever. His symptoms continued for ten days, at which time he received 8 Gm of sulfathiazole over a period of forty-eight hours. This was unaccompanied by sodium bicarbonate. After the first dose of the drug he became nauseated, and during the course of the treatment he vomited frequently. For two days prior to entrance he noted a gradual diminution of his urinary output, and for the thirty-six hours previous to entry he had passed no urine. At no time had he noted dysuria, hematuria or backache.

Physical examination failed to show any abnormalities except a temperature of 102 F. There were mild anemia and no leukocytosis. The nonprotein nitrogen was 86 mg per hundred cubic centimeters and the carbon dioxide combining power was 29 volumes per cent. A blood sulfathiazole value was not reported. No urine was obtained by ureteral catheterization. X-ray examination of the kidney showed no evidence of calculi formation.

On September 6 cystoscopy was done and a ureteral catheter was passed into the left kidney pelvis. Two cc of cloudy urine was obtained, which contained many epithelial cells, no crystals and no red cells. There was no further excretion of

21 Carroll, Grayson, Shea, John, and Pike, George. Complete Anuria Due to Crystalline Concretions Following the Use of Sulfapyridine in Pneumonia. *J. A. M. A.* 114: 411-412 (Feb. 3) 1940.

22 Dourmashkin, R. L., and Worton, Morris. Anuria Due to Complete Bilateral Ureteral Impaction with Concretions Following the Use of Sulfapyridine in Pneumonia. *New York State J. Med.* 41: 146-149 (Jan. 15) 1941.

23 Sadusk, J. P., Blake, F. G., and Seymour, Anne. Observations on the Absorption, Excretion, Diffusion and Acetylation of Sulfathiazole in Man. *Yale J. Biol. & Med.* 12: 691-696 (July) 1940.

urine in thirty minutes. The catheter could not be passed into the right pelvis. The patient was returned to the ward with the catheter in place. For the following seven days he was given large doses of 50 per cent dextrose, theophylline with ethylenediamine and fluids intravenously, caffeine with sodium benzoate intramuscularly and sodium bicarbonate and digitalis orally. The ureteral catheter was irrigated frequently with warm isotonic solution of sodium chloride. The catheter was removed on September 13, at which time the blood sulfathiazole was 1.0 mg. per hundred cubic centimeters. The blood urea nitrogen was 39 mg. per hundred cubic centimeters and the urine flow adequate. On September 19 the blood urea nitrogen was 22 mg. per hundred cubic centimeters and the phenolsulfonphthalein excretion was 30 per cent in the first hour and 20 per cent in the second hour. On September 24, the day of his discharge, the excretion was 25 per cent and 17 per cent in the first and second hours respectively.

The patient received only 8 Gm. of sulfathiazole in two days, after which he was anuric for thirty-six hours. His blood urea nitrogen was high and he was clinically uremic. Following ureteral catheterization only a few drops of urine could be obtained from the left kidney pelvis. It is remarkable that no erythrocytes or crystals were found in the urine, and at no time was gross or microscopic hematuria seen. An intensive regimen of diuresis was instigated, and the patient was discharged in fifteen days with evidence of moderate renal impairment. In view of the small dosage received, the symptoms might be due to overdosage, idiosyncrasy, sensitivity or hyperacetylation of the drug. In general, symptoms of overdosage are certain, reproducible and reversible; they can be produced in the experimental animal, and the severity of the reactions is dependent upon the dosage of the drug employed.²⁴ The dose employed in this case is certainly not excessive for the average patient. Symptoms due to idiosyncrasy are uncertain, are variable, have little relation to dosage and have no counterpart in the experimental animal.²⁴ Symptoms due to sensitivity are characterized by a previous history of contact, a period of incubation and an altered and accelerated response. The patient had not taken sulfathiazole previously. Although it is generally conceded that the sulfonamides produce no allergic antibodies such as precipitins and that the scratch, intradermal and passive transfer tests are generally negative, there are, however, at least a dozen reports in the literature which seem to indicate an allergic reaction to the sulfonamides in persons who have been previously sensitized to these drugs.²⁵

CASE 6.—B. G., a Negro aged 35, married, a longshoreman, entered Charity Hospital on Feb. 10, 1941 complaining of cough and chest pain of four days' duration. He was discharged on February 21.

Four days before admission the patient contracted an infection of the upper respiratory tract. On admission his temperature was 100 F. and there were coarse, dry rales in the lungs. The blood and urine were normal.

On February 11, sulfathiazole was started orally without sodium bicarbonate. Nine Gm. of the drug was given in thirty-two hours. The patient became nauseated. A voided urine sample was grossly bloody. Numerous needle shaped crystals were seen microscopically. Fluids were forced and sodium bicarbonate was given. By the seventh day of treatment, no more erythrocytes could be found in the urine. He was discharged on February 21.

This case superficially resembled case 5 in that a small dose of sulfathiazole was administered to a comparatively young person whose urinary findings were normal previous to the administration of the drug. The presenting symptom was hematuria; oliguria did not occur. The urine was loaded with the typical dumb-bell shaped rosettes and large orthorhombic and hemimorphic crystals, which are described in detail by Sunderman, Pepper and Benditt.²⁵ Many patients receiving sulfathiazole have crystals in the urine and yet show no sign of renal damage. Schwartz and his collaborators¹⁸ have shown that of 100 patients receiving sulfathiazole, half having alkaline and half acid urine, 28 per cent of the former and 70 per cent of the latter had crystalluria. The mere presence of crystals in the urine is not an indication to stop the drug. The patient responded to the simplest kind of treatment. Probably only extrarenal irritation, which cleared readily with the withdrawal of the drug, had taken place.

COMMENT

The 6 cases reported illustrate some of the renal problems encountered from the therapeutic use of sulfathiazole. Such renal injury has been noted more for sulfapyridine than for sulfathiazole.²⁰ This is most probably due to the fact that the latter drug has been used for only a relatively short time. It is too early to evaluate the status of sulfadiazine and sulfaguanidine as far as renal damage is concerned. Sulfanilamide appears to be much less likely to injure the kidneys seriously.²⁰ These individual differences among the sulfonamides can be explained in part, at least, by their known chemical and pharmacologic behavior. Sulfathiazole is rapidly and irregularly absorbed from the gastrointestinal tract, it produces variable blood levels, acetylation is limited, it is excreted rapidly in the urine, and its reabsorption from the tubules is poor because of its relative insolubility in urine. Sadusk, Blake and Seymour²³ showed that the rate of absorption in a normal adult male following a single oral dose of 4.2 Gm. (0.06 Gm. per kilogram) reached its peak of 9 mg. per hundred cubic centimeters in the blood three hours after ingestion. They also pointed out that the kidneys at autopsy contained more sulfathiazole than did the other organs of the body. In six hours the blood sulfathiazole level had fallen considerably. Forty per cent of the drug was excreted in the urine in six hours, and 70 to 80 per cent was excreted in twenty-four hours. In cases of pneumococcic pneumonia a single dose of 4 Gm. of sulfathiazole raised the blood sulfathiazole level to 4.9 mg. per hundred cubic centimeters within four hours. This ready absorbability of the drug was comparable to that found with sulfanilamide. When 32 patients without either heart disease or nephritis were treated with an initial oral dose of 4 Gm. of sulfathiazole and subsequent doses of 1 Gm. every four hours, the blood sulfathiazole level varied between 2 and 12 mg. per hundred cubic centimeters.²³ This variability of blood sulfathiazole was somewhat less by the tenth day. The rapid absorption of the drug in human beings makes it necessary to start with an initial dose of about 4 Gm. and to administer the drug at intervals of four hours day and night. With its variability of absorption, even in the presence of a normal excretory rate, it is necessary to examine the blood sulfathiazole level at regular intervals in order to control properly the progress of the patient. Carroll,

24. Cutting, W. C., and Cover, W. L.: Summary of Pharmacology of Sulfanilamide and Related Compounds, California & West. Med. 52: 110-113 (March) 1940.

25. Shavin, S. J.: Complications from Sulfanilamide and Its Related Compounds, Tri-State M. J. 12: 2490-2495 (May) 1940.

Kappel and Lewis²⁶ have stressed the value of blood sulfathiazole levels in controlling the pharmacologic and toxic effects of the drug. They feel that a blood sulfathiazole level of 5.0 mg. per hundred cubic centimeters is both safe and effective. This was demonstrated by a study of 200 benefited patients who showed no hematuria or oliguria. Wagoner and Hunting⁴ found sulfathiazole and sulfapyridine equally effective when administered to pneumonia patients for five days, keeping the blood sulfathiazole level between 4 and 6 mg. per hundred cubic centimeters. Rammelkamp and Stoneburner²⁷ concluded from their experiments in vivo and in vitro that 2 to 4 Gm. of sulfathiazole daily was sufficient to sterilize the urine of patients with mild urinary tract infection. Such a small dose as this may be highly desirable in treating patients with renal infection with a drug which itself may cause renal damage. Culp⁶ felt that large doses of sulfathiazole predisposed to renal complications. Carroll, Kappel and Lewis,²⁶ however, described a case in which 14 Gm. of sulfathiazole was administered daily without harmful effects. Oral doses of approximately 0.06 Gm. per kilogram have been used effectively against types I, II and III pneumococcus, beta Streptococcus hemolyticus group A, gonococcus and Staphylococcus aureus.

Sodium sulfathiazole in contrast to sulfathiazole is poorly absorbed from the gastrointestinal tract and rectum. Strauss, Lowell, Taylor and Finland²⁸ showed that, when sodium sulfathiazole was administered intravenously, a high blood level was attained as compared with the sodium salts of the other sulfonamides. The drug was excreted rapidly and almost quantitatively. Both sulfathiazole and its sodium salt were reabsorbed poorly by the renal tubules.

The degree of acetylation, which probably takes place to some extent in the liver, would seem to have some bearing on urolith formation for the acetyl form is highly insoluble. Sadusk, Blake and Seymour²³ have shown that the degree of acetylation of sulfathiazole is comparatively slight and variable. It ranges from 0 to 30 per cent, the median being 12 per cent. In patients with congestive heart failure and renal damage the blood sulfathiazole level following average doses may rise to 15.9 mg. per hundred cubic centimeters by the fourth day with a high degree of acetylation. This has been said to be due to the prolonged recirculation of the drug through the liver.

DIAGNOSIS

The diagnosis of renal damage is not difficult, especially if the patient has been properly studied and an inventory of the renal state has been taken before sulfathiazole was administered. The appearance of hematuria, oliguria, backache, tenderness over one or both kidney areas, decreased renal function, azotemia and progressive nephromegaly in a patient who has received sulfathiazole should make one suspect renal damage from the drug. Rarely do all the findings exist at the same time. Cystoscopic study will usually establish the diagnosis. Sulfathiazole crystals in the urine

may aid in establishing the diagnosis, but their presence alone does not mean renal damage. X-ray study will usually not reveal uroliths unless there is calcification, which is rare. It should be remembered that renal damage can occur in the presence of a low blood level of sulfathiazole and also after only a small amount of the drug has been administered.

PREVENTION

Because of the tendency of sulfathiazole to injure the kidneys, it is necessary to employ the drug cautiously. On administration of the drug, it is advisable to follow certain rules:

1. Determine whether or not the patient has had any sulfonamide medication before. If the history is not reliable, it is advisable to determine the blood level and prescribe accordingly. This will tend to prevent overdosage and reduce the likelihood of injuring the kidneys.

2. Evaluate the state of the patient's renal function and the nature of the urine being excreted before administering the drug. In the presence of impaired renal function there is a greater chance for overdosage and renal damage. Furthermore, infectious states for which the drug is used will in themselves produce renal changes with casts, erythrocytes and albumin in the urine. It is therefore necessary to know whether or not findings in the urine following the use of sulfathiazole are due to the drug or to previously existing infection. In the presence of serious renal damage proceed carefully with the drug, check the urine frequently and determine the blood sulfathiazole level often. Should hematuria develop or renal function definitely decline, stop the drug immediately. Do not allow the blood levels of the drug to increase above accepted therapeutic values. In some instances it might be well to determine the blood levels of urea nitrogen or total nonprotein nitrogen before giving sulfathiazole to patients who have some evidences of impaired renal function determined by urea clearances, concentration tests and the like. Such determinations will aid in supporting other findings in the future, especially if renal complications are suspected. Palpate for the kidneys before and during the use of the drug. As shown in the first case, the kidneys may become palpable once renal injury has occurred.

3. The hydration of the patient should be evaluated. A severely dehydrated patient will take in a great deal of fluid and excrete but little and therefore will be more likely to experience renal damage. Chart the fluid intake and output and make sure that the urine output is of good volume before and during the use of the drug. Curtis and Sobin¹⁷ have shown that 2,000 cc. of urine output daily are necessary to prevent the formation of acetyl sulfapyridine crystals in acid urine of low specific gravity for a 2 Gm. daily intake and that 6,000 cc. is necessary for a 6 Gm. daily intake. On the other hand, with an alkaline urine 1,250 cc. and 3,750 cc. of urine output daily would be necessary for doses of 2 and 6 Gm. daily intake respectively. Once oliguria develops in spite of a large fluid intake, the drug should be stopped.

4. There is some disagreement among observers as to the influence of the pH of the urine on the incidence of renal damage, as we have shown. Since some believe that an alkaline urine tends to reduce crystal forma-

26. Carroll, Grayson; Kappel, Louis, and Lewis, Bransford: Sulfathiazole: A Report on Clinical Investigations, J. A. M. A. 115:1350-1352 (Oct. 19) 1940.

27. Rammelkamp, C. H., and Stoneburner, L. T.: Sulfathiazole: A Clinical and In Vitro Study of Its Infections of the Urinary Tract, New England J. Med. 224:45-52 (Jan. 9) 1941.

28. Strauss, Elias; Lowell, F. C.; Taylor, F. H. L., and Finland, Maxwell: Observations on the Absorption, Excretion and Distribution of Sulfanilamide, Sulfapyridine, Sulfathiazole and Sulfamethylthiazole, Ann. Int. Med. 14:1360-1382 (Feb.) 1941.

tion,²⁹ and if the use of alkalis and an alkaline urine are not contraindicated in a particular case. It would be well to administer alkalis and maintain an alkaline urine.

5. There is some evidence to indicate the development of hypersensitivity to the sulfonamides.³⁰ It is well, therefore, to be extremely cautious and particularly vigilant in the treatment of patients who already suffer from a form of allergy. Patients who have recently received a sulfonamide drug may have been sensitized to such drugs and will react allergically if given another course of one of them.²⁵ It is better, if there is no need for haste, to give these two types of patients about $\frac{1}{2}$ Gm. of the drug by mouth and wait twelve hours. If no unfavorable reactions result, proceed with the treatment. Such a procedure should also be employed, if possible, in all cases so as to eliminate unpredictable severe reactions that occur because of idiosyncrasy to sulfonamides.

TREATMENT

The drug should be stopped immediately, once the slightest evidence of kidney damage is discovered. Fluids should be administered in large quantities, as described. Ureteral catheterization should be done promptly and the catheter should be allowed to remain in place until a normal volume of urine flow is reestablished. The pelvis should be irrigated at two hour intervals with warm (107 F.) distilled water. This procedure is effectual in relieving extrarenal obstruction; an intense diuretic regimen is necessary to relieve intratubular renal obstruction.

The diuretics should be large quantities of fluid and, if necessary, hypertonic solutions of dextrose. Avoid, if possible, the use of magnesium sulfate, as it has been suggested by some that it predisposes to the formation of sulfhemoglobin; but it may be used intravenously if there is no cyanosis and if the oliguria persists after other measures for diuresis have failed. Mercury and acid diuretics should not be used. The patient should be placed on an alkaline ash diet and the urine kept alkaline with the use of sodium bicarbonate.¹⁷ The protein intake should be restricted for four or five days or during the period of severe oliguria, hematuria and azotemia. Fluids should be administered in large quantities for many days after the kidneys have returned to normal.

These patients should be followed and carefully studied from time to time to make sure that there is no residual or latent damage which may become manifest as a chronic disease later. It is not known how complete and permanent the recovery is.

CONCLUSION

To reduce the incidence of renal damage, certain rules should be followed:

- (a) Check previous sulfonamide medication in order to prevent overdosage.
- (b) Evaluate the state of the renal function before the drug is administered and proceed accordingly.
- (c) Evaluate the state of hydration of the patient in order to insure a large volume of urine.
- (d) It is preferable to maintain an alkaline urine during the administration of sulfathiazole.

(e) Guard against allergy, hypersensitivity and idiosyncrasy.

Progressive oliguria, impairment of renal function, azotemia, hematuria, backache or nephromegaly should be indications for discontinuing the drug. The presence of crystalluria alone is no such indication.

Treatment consists of alkalization, diuresis and ureteral catheterization and irrigations with warm (107 F.) distilled water.

PERIPHERAL ARTERIOSCLEROSIS IN THE DIABETIC AND THE NONDIABETIC

A STUDY OF ONE HUNDRED AND SIX
AMPUTATED LEGS

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It has been repeatedly stated that peripheral arteriosclerosis occurring in diabetic patients differs from that of the nondiabetic. This has aroused considerable controversy and has given rise to many differences of opinion. In view of this we have compared the vascular system in the amputated legs of the diabetic and the nondiabetic patients operated on at the New York City Hospital, Welfare Island, between Jan. 1, 1930 and Dec. 31, 1940. Our findings indicate that the type of arteriosclerosis is similar in the two groups. The only difference as we found it lay in the changes seen in the veins.

Our series consisted of 106 patients, of whom 55 were diabetic and 51 were nondiabetic. There were 109 operations, 56 among the diabetic and 53 among the nondiabetic. In each instance the operation was performed at the level of the thigh.

The vascular tree was dissected from the site of amputation as far down toward the toes as possible. A careful description of the gross appearance was made. Sections were taken from the popliteal, anterior tibial, posterior tibial and dorsalis pedis arteries with the accompanying veins, small vessels and the surrounding soft tissues. In the majority of instances two or more levels of the same artery were studied. In some cases the dorsalis pedis was not sectioned. In several instances portions of the femoral, peroneal and the interosseus arteries were included in addition to the usual sections.

As a routine stain hematoxylin and eosin was used and in the majority, in addition, a modified Weigert elastic stain was employed.

In our series the white patients predominated. There were 95 of the white race and 11 of the Negro. In the 95 white patients we found 49 diabetic and 46 nondiabetic. Of the 106 patients there were 70 men and 36 women. Among the men we found 27 diabetic and 45 nondiabetic, while among the women there were 28 diabetic and 8 nondiabetic.

The relationship between the age incidence, the sex and the color was the same among the diabetic and the

29. Sunderman, Pepper and Benditt.²⁴ Curtis and Sobin.¹¹
30. Davidson, Arnold, and Bullowa, J. G.: Acquired Hypersensitivity to Sulfapyridine and Sulfamethylthiazole, *New England J. Med.* 223: 811-813 (Nov. 14) 1940. Stiles, M. H.: Hypersensitivity to Small Doses of Sulfathiazole, *Pennsylvania M. J.* 44: 823-824 (April) 1941. Shavin.²

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Read before the Clinical Society of the New York Polyclinical Medical School and Hospital at the stated meeting on Oct. 6, 1941.

nondiabetic. The average age of the diabetic was 65.5 years for the men and 65 for the women. In the male group the white patients had an average age of 65.3 years; the only Negro was 74. Among the women the average age of the whole group was 65.2 years. All the Negroes, 5 in number, fell into the seventh decade with an average age of 64 years. The youngest person in all the groups was a white man aged 44. The oldest was in the ninth decade and was a white man aged 82. There were 33 of the 55 patients between 60 and 69 years of age. Seven were younger and 15 were beyond the seventh decade. Among the nondiabetic the men averaged 68.1 and the women 67 years. The white men had an average age of 67.1 and the women of 67 years. There were only 4 Negroes, and they averaged 75.5 years and there was only one Negro woman, who was 65. The youngest person in the nondiabetic group was a white man aged 48 and the oldest was a white man aged 86. The majority of cases fell into the seventh and eighth decades, in which there were 20 and 19 respectively. The Negroes, of whom there were only 4, were all over 70 years of age. The white women, 7 in number, were also in the seventh and eighth decades.

Judging by the histories there was but little difference in the type of onset between the diabetic and the nondiabetic. We found notations relating to the onset in 105 of the 109 cases. There were four clinical types apparent: traumatic, infectious, trophic and insidious. In the 54 diabetic patients in this group we found 16 with a definite history of trauma as a precipitating factor. There were 3 with histories of frank infection; 8 were associated with trophic changes and 27 with an insidious onset. In the nondiabetic patients there were 13 with a history of trauma, 1 with a frank infection, 9 associated with trophic changes and 29 in whom the onset came on insidiously.

Mortality rates likewise varied little in the two groups. Up to the generally accepted forty-eight hour period for postoperative deaths there was a mortality of 6, or 11 per cent, in the diabetic and 5, or 10 per cent, in the nondiabetic. During the next eight days there were 8, or 15 per cent, diabetic deaths and 12, or 23 per cent, among the nondiabetic. From the tenth to the thirtieth day there were 13, or 23 per cent, who died in the first group and 7, or 14 per cent, in the second. The tabulation was carried out to the sixtieth day, and in the second thirty days 5, or 9 per cent, of the diabetic, and 6, or 12 per cent, of the nondiabetic died. The sixty day total, therefore, for the diabetic was 32 deaths, while that for the nondiabetic was 27.

PATHOLOGIC FINDINGS

The pathologic changes in the arteries were similar in the diabetic and the nondiabetic. In fact we were unable to distinguish one type from the other without the aid of a history. To prove this to our satisfaction we examined, at several periods of our study, the individual slides after all marks of identification had been obscured. Without exception every attempt to classify the specimens as diabetic or nondiabetic failed. Hence because we were unable to group the changes as diabetic or nondiabetic we are presenting our findings without regard to this classification.

Because the amputated legs contained no elastic arteries, we are limiting our discussion to the muscular

arteries and the arterioles. We noted in our studies of the muscular branches that sclerotic changes were consistently present and were extensive as a rule. It was also noted that the media was the coat that bore the brunt of the sclerosis. Calcification was found in all but 6 cases. When it was well defined the deposit was largely in the media. In the early stages or in cases in which the deposit was light it was invariably found at the internal elastic lamina first and is then built up toward and into the media.

Fibrosis was universal and in the majority of cases was severe. It was practically always accompanied by inflammatory reaction and organization with granulation. The latter was frequently seen to progress to bone formation, when spicules of lamellar bone and bone marrow of fatty or fibrous nature were found. Functioning bone marrow with hemopoiesis was seen seven times, four times among the diabetic and three times among the nondiabetic. The six heretofore mentioned as being free from calcification likewise showed slight or minimal atherofibrosis.

Changes in the intima of the muscular branches were just as frequent and severe as in the media but of a different nature. Atheromatous deposits were in direct relationship to the caliber of the artery. The larger the vessel, the more the liability to atheromatous deposits in the intima. It was found that the popliteal artery presented such deposits frequently, the tibial arteries less frequently and the dorsalis pedis only infrequently. In the few instances in which the change was present in the dorsalis pedis the deposit was extremely heavy in the larger arteries. As a rule the changes in the smaller arteries were characterized by an intimal fibromatous deposit.

Arteriolar sclerosis, the type generally stated to occur in the arterioles and the fine twigs of the arterial tree, was recognized frequently enough to be a positive finding although not a universal one. Its presence or degree of involvement was in no manner related to the changes found in the muscular arteries. Hence it has become our strong conviction that the changes occurring in the arterioles were independent of those in the muscular branches.

In the veins, however, conditions were different. Acute venous thrombosis of the larger radicles was found less frequently among the diabetic than among the nondiabetic. This was found nine times in the former and nineteen times in the latter. Venous changes of a chronic nature such as are seen in phleboscrosis were also less frequent in the diabetic. They were found in 11 of the diabetic and in 22 of the nondiabetic patients. Occasionally these changes had progressed to calcium deposits in the walls, but this was not a common finding.

Lymphangitis was almost invariably found where infection was present regardless of the presence or absence of diabetes. Pathologic changes in the nerves were never demonstrated in either group.

DRY GANGRENE

Dry gangrene occurred in 7 of the diabetic legs. In these cases the gangrene began as a dry process and remained so during the entire course. In the nondiabetic, dry gangrene with a similar progress was found

11 times. Cases in which the gangrene began as a dry affair and later became infected and developed cellulitis were 9 in number in the diabetic and 17 in the nondiabetic. In other words the first evidence of arterial occlusion with mummifying gangrene was present in 16 of the diabetic and 28 of the nondiabetic patients. The nondiabetic with a gangrene originally dry often developed a subsequent cellulitis. Such a development was found to occur twice as frequently in the nondiabetic as in the diabetic.

WET GANGRENE

Moist gangrene occurred in 32 of the diabetic cases and in only 20 of the nondiabetic. But few cases in either group developed a dry gangrene after the onset of the moist stage. There were 5 among the diabetic and only 2 among the nondiabetic, however, that came into this group. In the entire series 46 of the diabetic were associated with cellulitis at some time or another. Among the nondiabetic the total was slightly lower, 39 having a cellulitis at some period.

COMMENT

Joslin¹ and Wilder² believe that four types of arteriosclerosis can be distinguished: atherosclerosis, arteriolar sclerosis, Mönckeberg's sclerosis and senile sclerosis. Our data on atherosclerosis in this study are limited to its manifestations present in the legs. We can say, however, that this form of arterial change was frequently found in the larger muscular arteries such as the popliteal, with a diminishing occurrence as the branches got smaller. We also recognized arteriolar sclerosis in some of our cases. We feel, however, that we cannot accept Mönckeberg's or senile sclerosis as clearcut subdivisions. It seems to us there is no one type of arteriosclerosis that can be called by either of these terms. Likewise we feel that the changes in the arteries of the legs so frequently are a combination of atherosclerosis and the so-called Mönckeberg's sclerosis that the generic term of arteriosclerosis might be more applicable.³

Atherosclerosis, according to Joslin, is the characteristic vascular lesion among the diabetic. He accepts the fact that all types of arteriosclerosis are found in the legs of the diabetic with atherosclerosis predominating. He states that, in the legs removed from diabetic patients, he found a marked intimal involvement of the muscular arteries consisting of a heaping up of the intima with deposition of fatty material in which many cholesterol crystals were seen. He emphasizes the fact that atherosclerosis, supposed to be found only in the elastic type of arteries in the nondiabetic, is of common occurrence in the muscular arteries of the legs of diabetic patients. Wilder accepts the importance of atherosclerosis in the diabetic. He differs from Joslin, however, by saying that atherosclerosis may be found in the smaller muscular arteries of the nondiabetic. He feels that the frequency of atherosclerosis is not unusual in the arteries of the diabetic but the intensity of the process and the incidence of severe grades in the arteries of the heart and the legs are significantly greater in the diabetic than in the nondiabetic. He looks favorably on

the evidence of Warren⁴ that long duration of diabetes is attended with more progression of atherosclerosis in the heart and legs than can be due to aging but says that many patients with diabetes of long duration present no more atheroma at autopsy than the nondiabetic of the same age.

We cannot agree with either Joslin or Wilder that atherosclerosis is the predominating form of arterial change in diabetic gangrene of the extremities. Nor can we agree with Joslin that it is not found in the muscular arteries of the leg in the cases of nondiabetic gangrene. Furthermore, we cannot accept the statement of Warren that the extent of the atheromatous change is in direct relation to the duration of the diabetes. Our feeling is that in a percentage of diabetic patients atheromatosis predominates but that in an equal percentage of the nondiabetic the same condition is found. Our studies show us that atherosclerosis may be mild or severe in either type of gangrene. When it is severe it is marked by extensive plaques in the large arteries and lesser deposits in the smaller branches. It is only in these severe cases that the dorsalis pedis artery becomes involved. Severe atherosclerosis therefore not only presents more involvement of the elastic arteries but extends peripherally toward the smaller arteries. This, we will repeat, is true for both types of gangrene.

Arteriolar sclerosis is generally accepted as a well defined lesion that may be found, among other places, in the finer twigs of the arteries of the legs. Root and Sharkey⁵ of the Joslin Clinic, after a study of 175 autopsies with 48 instances of diabetic gangrene of an extremity, reported that atherosclerosis is the rule in these cases and that hypertension appears to accentuate the process. They describe an intimal lesion with hyaline thickening and obliteration of the lumen. Wilder feels differently about the situation, saying that arteriolar sclerosis is no more frequent in the diabetic than in the nondiabetic. Though accepting the presence of arteriolar sclerosis in the extremities of the diabetic, he emphasizes the occurrence of medial hypertrophy, stating that it may be associated with atheromatous processes of the intima. We found arteriolar sclerosis in both types. It was the medial hypertrophy described by Wilder. However, we did not find the atheromatous changes associated with the medial hypertrophy. Nor did we find the extensive atheromatous process described by Root and Sharkey. Very rarely there was present calcification of the media close to the internal elastica. This was the closest approximation to so-called Mönckeberg's sclerosis of the larger muscular arteries that we encountered. Excluding any vascular lesions that might have been present in the kidney, the medial hypertrophy of the arterioles of the legs bore no relationship to the presence or absence of hypertension. Likewise it did not seem to bear any resemblance to occlusive disease of the large arteries in the immediate neighborhood.

Mönckeberg's sclerosis does not seem to us to be, in the legs at least, sufficiently cleancut to be considered an entity. Classification of this type of arterial change therefore is difficult, and a comparison of its occurrence in diabetic and nondiabetic patients is of questionable value. We have the feeling that if it is to be considered

1. Joslin, E. P.: *The Treatment of Diabetes Mellitus*, ed 7, Philadelphia, Lea & Febiger, 1940.

2. Wilder, R. M.: *Clinical Diabetes Mellitus and Hyperinsulinism*, Philadelphia, W. B. Saunders Company, 1940.

3. MacCallum, W. G.: *Textbook of Pathology*, ed 6, Philadelphia, W. B. Saunders Company, 1936.

4. Warren, Shields: *Pathology of Diabetes Mellitus*, ed. 2, Philadelphia, Lea & Febiger, 1938.

5. Root, H. F., and Sharkey, T. P.: *New England J. Med.* 215: 605 (Oct. 1) 1936.

at all it must be looked on simply as a manifestation of atherosclerosis. According to Joslin it is a patchy involvement of the media without the accumulation of lipid. He brings out the point that it occurs together with atherosclerosis and in such close relation that it suggests strongly that they are the same process. Wilder agrees that it is patchy, goes on to necrosis and calcification and lacks lipid deposits. He believes that it involves the legs by predilection. Like Joslin he considers that the primary seat is in the media and that it well may be a part of the same process as atherosclerosis. We accept the presence of a condition generally called Mönckeberg's sclerosis but we feel that the process is an arteriosclerosis whose character is determined by the anatomic structure of the arteries in which it is found. MacCallum has stated that one may well expect the manifestations of arteriosclerosis to be different in different portions of a system varying so greatly in its anatomic structure. However, as far as we were able to identify it in the specimens concerned in our studies we were unable to note any difference in its presence in either the diabetic or the nondiabetic.

Senile sclerosis likewise seems to us to be a misnomer. Let us consider Joslin's conception of this subdivision of arteriosclerosis. He accepts it as a diffuse fibrosis causing a change in the elastic tissue with a loss of elasticity and degeneration. Wilder, who also uses this term in his classification, considers it a diffuse change consisting of progressive deterioration with splitting of the internal elastic membrane and formation of new fibrous tissue. We can take no issue with these findings but we cannot accept that these changes are of a senile nature. We feel that this is not positively a condition of old age, as it is found occasionally in childhood, frequently in the third decade, and may be practically absent in the eighties and nineties.

Combinations of the various types of arteriosclerosis are frequently found. This naturally leads to great difficulties in arriving at clearcut conceptions of the various subdivisions and often makes it difficult to determine the type present in the individual case. Joslin states that any or all varieties may be associated with the so-called senile type. He also says that Mönckeberg's sclerosis and atherosclerosis are a very common coincidence. Wilder notices the same combinations. We found the different types of arteriosclerosis occurring in various combinations. There was, however, no difference in the combinations found in the diabetic and the nondiabetic specimens.

Occlusion of the lumen of the artery is the serious development in arteriosclerosis. It is generally accepted today that such occlusions can be attributed mainly to atherosclerosis with a rare incidence due to Mönckeberg's sclerosis. The other types are not held responsible for any part in this phenomenon. Ordinarily the process develops slowly, but it may be found at times to advance rapidly. The time element may not be the sole factor, as some cases appear to occur with a rapid tempo. As the atheromatous process progresses there is a tendency for degenerative changes to occur in the endothelium. This degeneration is the prelude to arterial thrombosis. A second process can occur. Instead of thrombosis there may be ulceration with a discharge of the underlying atheromatous deposit into the blood stream.

In our study we found an equal number of diabetic and nondiabetic patients with gangrene from occlusion. In view of the fact that the diabetic incidence in the general populace is about 1 per cent, our finding of an equal number in each group coming to amputation suggests strongly that peripheral occlusive disease is many times more frequent in the diabetic.

Both acute and chronic changes were more frequent in the veins of the nondiabetic. This may be accidental, but it does suggest that the condition of the veins may have a definite bearing on the more frequent occurrence of venous occlusion in the nondiabetic.

It is commonly stated that diabetic gangrene is usually moist and nondiabetic gangrene dry. To this we cannot agree. We found that almost two thirds of the nondiabetic specimens were complicated at some time with cellulitis, with but a slightly larger number of diabetic patients similarly involved. Again early and extensive cellulitis was not uncommon in the nondiabetic, although it was somewhat more frequent in the diabetic.

Since these findings are contrary to those of most investigators, several questions arise: 1. Does the phlebosclerosis which we found more frequently in the nondiabetic play a role in the increased incidence of infection? 2. Are there metabolic tissue changes in the diabetic which are the deciding factors in the absence of phlebosclerosis? 3. Is the term "wet gangrene" too loose and would the use of more rigid criteria help to differentiate the conditions found in the presence of infection?

With regard to the phlebosclerosis, our findings are suggestive that it may play a role; but no dogmatic statement can be made. Metabolic changes can very well be considered as possible factors, as it is well accepted that infection in any part of the body is more severe among the diabetic than among the nondiabetic. With regard to the final question, we believe that the term "gangrene" is used rather promiscuously. We feel that a more careful observation and use of terms is advisable. As Williams and O'Kane⁶ have shown in their classification, careful evaluation of the physical findings will usually distinguish between the result of occlusive disease and infection.

SUMMARY AND CONCLUSIONS

The peripheral vascular pathologic condition of 100 amputated legs was studied. There were 56 diabetic specimens and 53 nondiabetic specimens. The two types were in the same age period. The women outnumbered the men in the diabetic group. The opposite was true in the nondiabetic group. The arterial changes were similar in the two groups. Acute venous occlusions and phlebosclerosis were more frequent among the nondiabetic. Infection with cellulitis was only slightly more frequent in the diabetic group. Dry gangrene occurred almost as frequently in the diabetic as in the nondiabetic. The occlusive element in arteriosclerosis is the dangerous feature in both types. The terms dry and wet gangrene do not properly describe the conditions found. More rigid criteria and more careful differentiation between the lesions secondary to occlusive arterial disease and those due to infection should be instituted.

939 Woodycrest Avenue.

6. Williams, F. W., and O'Kane, T. J.: *Surg., Gynec. & Obst.* 956 (May) 1937.

DOES DIABETES MELLITUS PREDISPOSE
THE PATIENT TO THE PYOGENIC
SKIN INFECTIONS?A STUDY OF THE ETIOLOGIC RELATIONSHIP
OF FURUNCULOSIS AND CARBUNCLEJOHN R. WILLIAMS, M.D.
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There is a prevailing impression among both physicians and laymen that boils and carbuncles are commonly associated with diabetes and that the diabetic are predisposed or more likely to suffer from these pyogenic skin infections than are the nondiabetic. An examination of the literature does not support this view. The *Cumulative Index*, beginning with the year 1917 to March 1941, covering a period of more than twenty-five years, lists only seven articles dealing with carbuncle or furunculosis in association with diabetes. In each instance they are case reports and descriptions of surgical treatment. None of the standard manuals on diabetes discuss the incidence of skin infections, the text being confined to treatment. This is also true of many of the prominent manuals relating to the general practice of medicine. It may be said, therefore, that there is practically no evidence in the literature supporting the conclusion that diabetes mellitus predisposes to pyogenic skin infections. Since these infections are usually very serious as to comfort and often fatal, the subject is worthy of more careful study than it has thus far received.

In an attempt to learn how frequently furuncles and carbuncles occur both independently and in association with diabetes, a study was made of the admissions to two large general hospitals, the Strong Memorial and the Rochester General, and of the office practice of several general practitioners.

In one of these hospitals during the years 1938, 1939 and 1940 there were a total of 27,209 admissions. Of these, 330 were diabetic patients, 8 of whom were afflicted with boils or carbuncles. In the remaining 26,879 patients there were 166 instances of boils or carbuncles.

In the other large general hospital over the same period there were 43,980 admissions; 295 patients were afflicted with boils or carbuncles; of these 8 were diabetic.

Since the advent of insulin and the improvement in the general treatment of diabetes, only diabetic patients afflicted with a serious complication have sought admission to hospitals. For the most part too they are the elderly or middle aged. This is particularly true of patients with carbuncles.

In 2,130 office patients of four general practitioners, there were 89 instances of furunculosis or carbuncles. In this group there was but 1 diabetic patient who had a furuncle. From these data it is obvious that there is no significant etiologic relationship between pyogenic skin infections and diabetes.

It is important to inquire how frequently diabetic patients contract skin abscesses. In doing so it should be borne in mind that, when a person is once afflicted, diabetes becomes a permanent malady. Under the present method of treatment the diabetic apparently live on indefinitely. I have under my care several patients who

acquired diabetes before the advent of insulin. Some of these were children at its onset. They have lived fairly normal lives since; many have married and have achieved parenthood. The diabetes is not a disabling handicap. Many patients have thus gone on from five to twenty-five years. A certain number of nondiabetic persons in such a period of time would normally contract pyogenic skin infections. It follows therefore that a similar proportion of diabetic patients may be expected to become infected.

A study of 500 diabetic patients admitted to both office and hospital practice was made with reference to the incidence and occurrence of the pyogenic skin infections diagnosed as boils and carbuncles. They are classified according to sex and age in the accompanying table.

In only one instance did the onset of a boil coincide with the discovery of diabetes. In all the other cases except 1, both boils and carbuncles occurred long after the onset of diabetes and apparently as an independent and unrelated phenomenon. In the 1 case that was an exception the carbuncle occurred ten years before the onset of the diabetes.

*Occurrence of Boils and Carbuncles in Five Hundred
Cases of Diabetes*

	Cases
Young, under 21 years.....	75
Old, over 21 years.....	424
Male	240
Female	260
Boils, total occurrence in 500.....	13
Carbuncles, total occurrence in 500.....	7

Although the numbers of cases in this study are small, they support the opinion and conclusions of other workers who have examined the question. They are as follows:

1. The prevailing assumption that diabetes mellitus predisposes an individual to pyogenic skin infections is not supported by clinical investigation.

2. Pyogenic skin infections occur no more frequently in diabetic than in nondiabetic individuals.

3. Both of these complications occurred more frequently in the middle aged and elderly in whom a general breakdown was evident. It is extremely doubtful that diabetes increases the susceptibility of the diabetic appreciably to pyogenic skin infections.

388 Monroe Avenue.

Yellow Fever Surveys.—The discovery of a simple test in the mouse for the presence of immune bodies to yellow fever, and the fact that after a natural infection with yellow fever immune bodies persist for very many years—probably for the life of the individual—have enabled surveys to be undertaken for the purpose of determining the distribution of yellow fever both in space and time. Such a survey was initiated in Africa in 1933 by the International Health Division of the Rockefeller Foundation. The results of the survey in the Anglo-Egyptian Sudan, published by Hewer (1934) and by Sawyer and Whitman (1936), show that if the specificity of the test is accepted yellow fever is not confined to the West Coast of Africa, as was believed for many years, but extends eastward as far as the White Nile.—Findlay, G. M.; Kirk, Robert, and MacCallum, F. O.: Yellow Fever and the Anglo-Egyptian Sudan: Distribution of Immune Bodies to Yellow Fever, *Ann. Trop. Med.* 35:121 (Dec. 31) 1941.

FATTY DEGENERATION OF THE LIVER
IN PREGNANCYREPORT OF A CASE WITH RECOVERY: CHEMICAL
AND HISTOLOGIC STUDIES

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Acute yellow atrophy of the liver, also known as icterus gravis, acute parenchymatous hepatitis, malignant jaundice, parenchymatous degeneration of the liver or acute necrosis of the liver, is a widespread degeneration of the liver with toxic manifestations, jaundice and a reduction in the size of the liver. We prefer the term acute necrosis as more descriptive of the condition but will adhere to acute yellow atrophy, as it is so well established in the literature. It is known to occur at all ages in both sexes but is rare in pregnancy. The first case of acute yellow atrophy of the liver in pregnancy was described by Kerkring in 1706 and quoted by Williams,¹ and most writers since then have referred to the relation of the disease to pregnancy. Although very rare, it may be epidemic, as reported by Kent,² who observed 14 cases within eighteen months, all in association with pregnancy. But Kent's series lacks pathologic confirmation. In association with pregnancy, acute yellow atrophy of the liver is generally included among the toxemias of pregnancy. Typical attacks have occurred in men and in nonpregnant women, which should separate it from the toxemias of pregnancy as the term is commonly used.

Judging from the pathologic observations, there is a milder form of the disease which is variously known as acute hepatitis, toxic hepatitis and obstetric acute yellow atrophy. Hepatitis in the sense of evidence of infection is not the predominant lesion, but rather extensive fatty degeneration of the central portions of the liver lobules without actual necrosis or atrophy. Fatty degeneration of the liver seems to be a more descriptive term. The onset and the usually fatal clinical course are identical with those of true acute yellow atrophy, and the location and type of lesion, that is, fatty changes in the liver cells in these central portions of the lobules, are the same. Although the liver cells in these areas are not disintegrated, that would seem to be a matter of degree rather than of kind of disease. Until more convincing evidence is presented, we will consider this condition as an early stage of acute yellow atrophy.

INCIDENCE

The frequency of acute yellow atrophy of the liver is quoted by different authors in wide variation, but all agree that it is very rare. There is little information on the incidence of this disease in China.

In reviewing the case histories of the Department of Obstetrics and Gynecology of the Peiping Union Medical College, we found only 4 cases in the records of approximately 10,000 deliveries. Two of these cases were discarded because of insufficient evidence. One had been reported by Hsiung,³ and a report of the remaining case is now in process of publication.

From the Department of Obstetrics and Gynecology, Peiping Union Medical College.

1. Stander, H. J. Williams Obstetrics, ed. 7, New York, D. Appleton-Century Company, Inc., 1936, p. 722.

2. Kent, Celal: Zentralbl. f. Gynäk. 62: 429 (Feb. 19) 1938.

3. Hsiung, V.: Nat. M. J. China 14: 211 (Aug.) 1928.

Among 94,000 patients admitted to this hospital the diagnosis of acute yellow atrophy of the liver has been made for only 12. For 9 of these the diagnosis was made only on the clinical findings; 7 were men, and 5 were women in 4 of whom the disease was in association with pregnancy. The 3 cases in which autopsy was done appeared among the records of 3,400 autopsies.

Dr. Gordon King⁴ of Hongkong stated that acute yellow atrophy of the liver had not been observed during the past 31,113 deliveries from the year 1926 to 1940 inclusive in the department of obstetrics of the University of Hongkong.

Dr. Amos Wong⁵ of Shanghai informed us that at St. Luke's Hospital, Shanghai, acute yellow atrophy of

Blood Analyses

Date	Time	Bilirubin	Nonprotein Nitrogen	Urea Nitrogen	Uric Acid	Amino Acids	Chlorides	Sugar	Carbon Dioxide
1/30/41	12 n	6.7	32	11.4	4.7	7.4	...	111	85.2
1/31/41	9 20 a.m.	11.4	43	15.5	4.0	11.4	...	143	46.7
2/ 1/41	4 a.m.	11.4	...	...	...	...	...	180	30.6
	8 10 a.m.	...	...	...	...	...	...	280	30.7
	9 25 a.m.	...	...	...	...	...	...	95	26.6
	11 10 a.m.	12.7	...	...	...	...	...	26	...
	4 p.m.	11.4	...	...	...	...	...	55	...
	8 15 p.m.	...	...	...	...	...	...	26	...
2/ 2/41	8 10 a.m.	6.6	33	15.5	3.6	0.7	508	111	50.0
	5 p.m.	...	...	...	...	...	...	49	...
	8 p.m.	...	...	...	...	...	...	100	...
2/ 3/41	8 a.m.	5.0	26	11.4	3.3	5.8	508	44	...
	4 p.m.	...	...	...	...	...	...	57	...
2/ 4/41	9 a.m.	4.0	24	9.4	3.0	4.5	625	...	59.4
	9 p.m.	...	...	...	...	...	...	40	...
2/ 5/41	10 50 a.m.	4.0	25	9.0	2.4	5.4	620	105	41.9
	10 30 p.m.	4.5	...	...	...	...	...	87	...
2/ 6/41	10 20 a.m.	5.0	22	12.7	2.6	4.2	561	151	59.3
2/ 7/41	3 45 p.m.	5.0	24	12.1	2.4	5.2	590	174	49.4
2/ 8/41	10 a.m.	5.6	29	15.0	2.2	6.3	630	163	48.6
2/ 9/41	9 40 a.m.	5.7	33	14.0	2.4	6.7	500	65	30.6
	5 30 p.m.	...	...	...	...	...	...	70	...
2/10/41	8 50 a.m.	5.1	26	11.4	2.2	6.7	...	77	60.3
	4 40 p.m.	...	...	...	...	...	...	27	...
2/11/41	8 10 a.m.	3.0	25	12.1	2.2	6.6	619	77	59.7
	5 p.m.	...	...	...	...	...	...	100	...
2/12/41	8 40 a.m.	2.7	26	12.1	2.8	6.6	...	91	52.5
2/13/41	8 25 a.m.	3.6	26	12.0	1.8	6.9	585	85	51.1
	11 p.m.	...	...	...	...	...	...	74	...
2/14/41	8 30 a.m.	2.2	20	12.0	2.1	5.5	594	105	57.9
2/15/41	8 30 a.m.	...	...	...	...	...	...	100	...
2/16/41	4 40 p.m.	2.0	...	...	...	...	...	89	...

All the values are expressed in milligrams per hundred cubic centimeters of blood except the carbon dioxide combining power, which is in volumes per cent.

the liver had not been observed during 450 autopsies performed over a period of three years, while at the Red Cross Hospital it was observed three times in 700 autopsies over a period of thirteen years. In 1 case the disease had been in association with pregnancy. One can say only that this condition is very rare in China.

ETIOLOGY

The cause of acute yellow atrophy of the liver is still in question, and it may be that various factors work simultaneously in an individual case. The disease has been definitely associated with certain chemical poisons, for example chloroform, arsenic, phosphorus, cinchophen and carbon tetrachloride, to mention only a few.

Many theories are advanced to explain this condition. Of importance is the work of Opie,⁶ who found that

4 King, Gordon. Personal communication to the authors.

5 Wong, Amos. Personal communication to the authors.

6 Opie, E. L. J. Exper. Med. 12: 367, 1910.

the combination of chloroform and infection may produce in dogs a condition similar to acute yellow atrophy in man. Changes in the liver produced by disturbances in metabolism may explain the fact that in more than one half of the reported cases involvement has occurred during the last half of pregnancy, at a time when changes in metabolism are well known to occur. Previous damage to the liver has been suspected, and both catarrhal jaundice and cirrhosis of the liver have been accused.

The Peiping Union Medical College Hospital admits a large number of patients in the terminal stages of disease. The relative number who have pregnancy with complications is high. It is surprising that, in an area where the nutritional state of the population is low, the incidence of avitaminosis and nutritional edema is high and where previous damage to the liver, such as cirrhosis, is relatively common, acute yellow atrophy of the liver associated with pregnancy has occurred not more than five times in this hospital in twenty years. It seems probable that a single infection or toxin is not responsible but that a combination of factors in the presence of impairment of hepatic function may produce the disease.

REPORT OF CASE

A few cases of recovery from acute yellow atrophy of the liver which were based on clinical observations have been reported. The case reports of Townsend⁷ and Millar⁸ brought in the question of chloroform poisoning, the dangers of which are well established. The diagnosis in the case reported by Duncan and MacLachlan⁹ is not convincing. One case of acute yellow atrophy of the liver in pregnancy, with recovery, was described by Way¹⁰ but the diagnosis was supported only by observation of the size of the liver at operation. In a search of the literature we found no report of a case of proved acute yellow atrophy, or fatty degeneration, of the liver in association with pregnancy with recovery. We are reporting such a case, including data on two biopsies of the liver, in considerable detail, in the hope that added chemical, histologic and clinical data may finally result in a better understanding of this obscure disease. The detailed account of the stormy course, the treatment and the studies on the patient, who was admitted to our service in the early stage of the disease, is as follows:

A Chinese woman aged 30, a secundigravida and primipara, was admitted to the hospital on Jan. 30, 1941 not definitely in labor. Her expected date of confinement was February 21. She had had antepartum care in our hospital and was found to have a flat pelvis; the diagonal conjugate measured only 10 cm. The blood Wassermann and Kahn reactions were negative. Her first baby had been born spontaneously two years before, after a labor of forty-eight hours, but the baby died of convulsions three days after birth. On January 25 the patient was brought to our teaching clinic for demonstration of cephalopelvic disproportion, and at that time she complained of general weakness and loss of appetite and had eaten but little

for several days. The patient caught cold on the same day and started to have epigastric discomfort, with vomiting of coffee ground material on the following day. She gave a history of repeated vomiting of the food eaten during the course of gestation until two weeks before admission. Constipation had been present for the past three days. Jaundice was not noticed by the family members. She had been an opium addict for four months, but otherwise there was no history of taking any drug or medicine.

On admission the temperature was 37.5 C., the pulse rate 90 and the blood pressure 110 systolic and 80 diastolic. The patient was icteric, mentally dull and drowsy but conscious. She had the symptoms and signs of infection of the upper part of the respiratory tract, but the lungs were clear and the heart was normal. The spleen and the liver were not palpable, and the area of hepatic dullness was not diminished. The patient vomited several times, producing a coffee ground material; the reaction to the guaiac test was strongly positive for blood. The van den Bergh reaction was direct and immediate, and the icterus index was 20. The bilirubin content was 6.7 mg. and the carbon dioxide combining power was 28 volumes per cent. The liver, by the bromsulphalein test, showed 40 per cent retention after thirty minutes. The hemoglobin

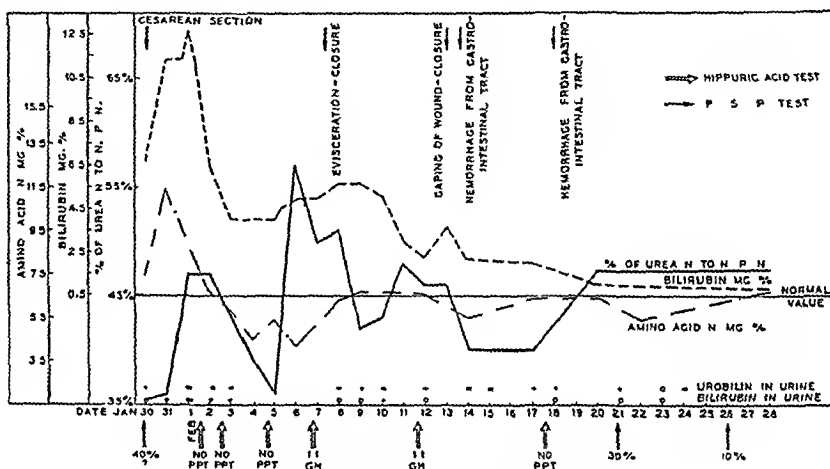


Fig. 1.—Fatty degeneration of liver in pregnancy; liver function.

content was 14.9 Gm. and the white blood cell count was 29,400. The urine showed a trace of albumin and urobilin (1 plus) but was negative for bilirubin. Intravenous dextrose therapy was started after a sample of blood for chemical tests was obtained. (The actual amount of dextrose solution and blood transfusions administered to this patient are recorded in figure 9.)

The patient had moderate labor pains for four hours without progress, and drowsiness increased until she was in stupor. A tentative diagnosis of early acute yellow atrophy of the liver was made, and termination of the pregnancy was thought to be wise. A cesarean section was done, and, although local anesthesia was tried, the patient was uncooperative, and gas and oxygen with a little ether had to be used. The baby was apneic at birth but cried vigorously a few minutes later. The liver was found to be normal in appearance and size, and a biopsy specimen was obtained.

On January 31 the patient coughed severely. The jaundice was worse, the icterus index being 75 and the bilirubin content 11.4 mg. There was no albumin or sugar in the urine but there were bilirubin (2 plus) and tyrosine (detected by the sulfuric acid test), 1 plus; tests for leucine gave negative results. On February 1 the blood sugar level steadily rose to 280 mg. with sugar (1 plus) and acetone (3 plus) in the urine. Ten units of insulin was given, and in two hours the blood sugar fell to 26 mg. and the patient was in hypoglycemic shock, from which she recovered after the intravenous injection of a solution of dextrose. The bilirubin in the blood increased to 12.7 mg. on the same day. From February 2 to 6 the patient was steadily improving, although the violent coughing

7. Townsend, Eric: Brit. M. J. 2: 558 (Sept. 9) 1939.

8. Millar, W. M.: Brit. M. J. 1: 1284 (June 24) 1939.

9. Duncan, Cameron, and MacLachlan, G. R.: Am. J. Obst. & Gynec. 25: 157 (Jan.) 1933.

10. Way, Stanley: Lancet 2: 934 (Oct. 28) 1939.

persisted. The blood sugar was low in spite of the repeated dextrose infusions and the patient had frequent symptoms of hypoglycemia. Insulin, 5 to 10 units, was given together with each dextrose infusion during the first few days. The jaundice improved, and the bilirubin in the blood fell to 4 mg. on

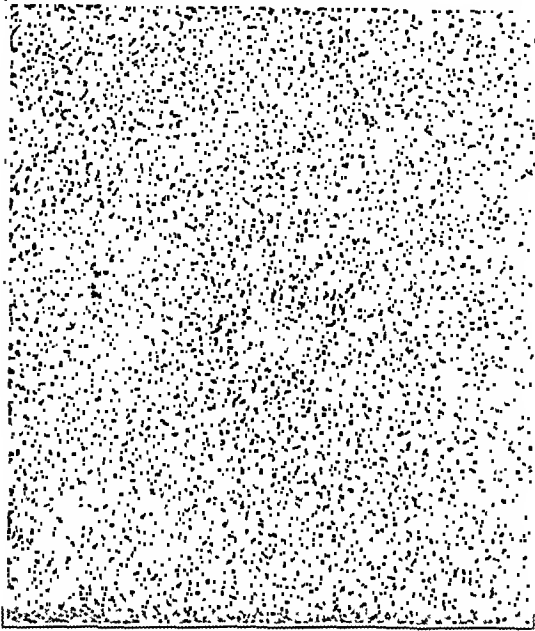


Fig. 2.—First biopsy specimen, showing central vein in the center with thin rim of normal liver cells around portal spaces; $\times 55$.

February 4. The patient developed ascites, with leakage of bile tinged ascitic fluid from the wound. The renal function, judged by the phenolsulfonphthalein test, was normal and the hippuric acid test of hepatic function repeatedly produced no precipitate. On February 7, after severe coughing, the abdomi-



Fig. 3.—First biopsy specimen, showing swollen clear liver cells and compressed sinusoids around a central vein; $\times 300$.

nal incision separated and loops of bowel were extruded. A secondary closure was done under spinal anesthesia. The liver was smaller than before and yellow tinged, and another biopsy specimen was taken. Much bile tinged ascitic fluid was removed by suction. The hippuric acid test done on that day showed 1.1 Gm. of benzoic acid. For the next few days the

patient was critically ill, the bilirubin in the blood increased and she coughed almost continuously. On February 13 the abdominal incision gaped again, a loop of intestine was found caught in the wound and there were symptoms and signs of partial intestinal obstruction. Another closure, with silver wire as the suture material, was done on the same day with the aid of spinal anesthesia. There was a moderate amount of fluid in the peritoneal cavity, and the liver was not inspected as the incision was infected. On February 14 and 18 the patient had profuse hemorrhage from the gastrointestinal tract, the discharge from the duodenal tube being bright red, and as much as 1,400 cc. of dark old blood was passed in the stools on one occasion. She was in shock several times and had to be given blood transfusions together with infusions of dextrose. After February 19 the patient gradually improved and there was no more bleeding. The jaundice disappeared, the bilirubin in the blood reaching the normal value on February 20 and the intravenous administration of dextrose was not necessary after February 23. The bromsulphalein test showed 30 per cent retention at the end of thirty minutes on February 21, 10 per cent on February 26 and a trace on March 7. The

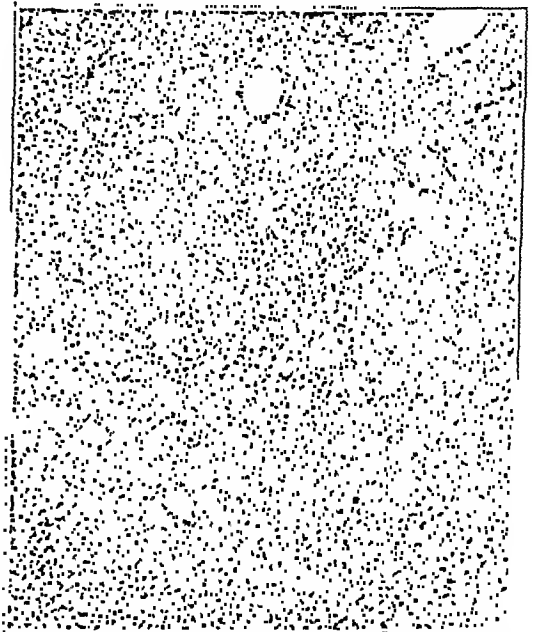


Fig. 4.—Second biopsy specimen, showing stage of recovery with central cell occupying only about half of each lobule; $\times 55$. Compare with figure 2.

temperature and the pulse rate fluctuated according to the severe clinical course. On February 8, when the patient was in desperate condition, the temperature was 39.6 C. (104 F.) and the pulse rate 140. After this both the temperature and the pulse gradually improved until they were normal on February 20. An infection in the incision was drained, the wound healed and the patient has apparently completely recovered.

CHEMICAL ANALYSES

The clinical picture on admission strongly suggested an early process of liver damage. A blood specimen showed sugar of 111 mg., uric acid of 4.7 mg., nonprotein nitrogen of 32 mg., urea nitrogen of 11.4 mg. and amino acid nitrogen of 7.4 mg. per hundred cubic centimeters of blood. The blood sugar was normal, while the uric acid and amino acids were at the upper limit of normal range. The urea nitrogen was 35 per cent of the nonprotein nitrogen, which was somewhat low as compared with 45 per cent, the average ratio in normal pregnancy according to Stander.¹¹ The carbon dioxide combining power of 28.2 was far below the value for normal pregnancy at term of 45 volumes per cent, indicating a low alkali reserve. The bilirubin of 6.7 mg. and the icterus index of 20 were considerably above the normal values. The van den Bergh test was direct

11. Stander, H. J.: *Bull. Johns Hopkins Hosp.* 35: 133 (Mar) 1924.

and immediate. The bromsulphalein test showed 40 per cent retention after thirty minutes. These findings suggested some form of liver damage. The blood sugar rose steadily during the next three days as a result of the large amounts of dextrose given. Subsequent blood specimens showed significant changes on January 31 (the fifth day of the disease), when the bilirubin was 11.4 mg. At this time the urea nitrogen formed 36 per cent of the nonprotein nitrogen and the amino acids reached a high point of 11.4 mg. On February 1 the bilirubin was 12.7 mg. and the icterus index was 120. The blood chlorides were consistently high throughout the course of the disease. On February 8 the serum albumin was 1.7 Gm. and globulin 2.8 Gm. per hundred cubic centimeters of blood. The patient was improving, when coughing produced evisceration and made a second operation necessary. This setback may account for the fall in the urea nitrogen ratio to nonprotein nitrogen, increase in bilirubin and amino acid nitrogen and the fall in blood sugar. The blood chemical studies were continued daily until the values were within normal limits. The blood sugar was carefully watched because of its dangerous fluctuations and it finally became stable on February 12.

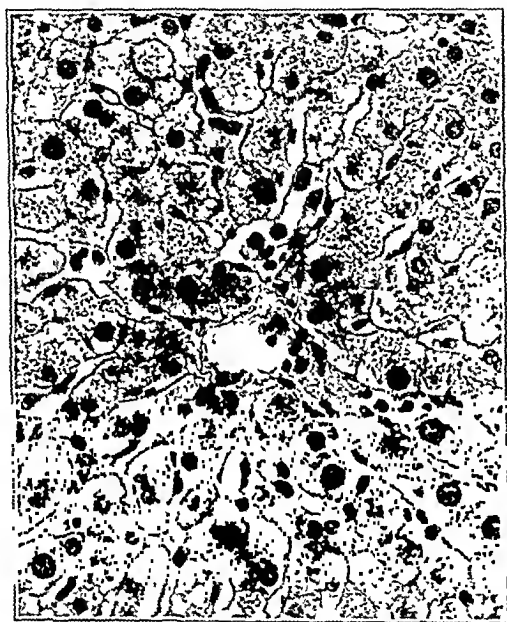


Fig. 5.—Second biopsy specimen, showing stage of recovery with droplets of fat occupying less of area of each cell; $\times 300$. Compare with figure 3.

The urinary findings were not so complete. The twenty-four hour urine specimens were examined for urea nitrogen, the values being 1.8 Gm. on January 31, 156 mg. on February 3 and 576 mg. on February 6. Tyrosine was found in the urine on January 31, and leucine was negative. The excretion of urea was decidedly low and corresponded both with the low blood urea and with the severe clinical course. Ammonia nitrogen and the total nitrogen were not determined, but as the carbon dioxide combining power showed no acidosis after the first day we may assume that no unusual amount of ammonia was excreted.

Bollman, Mann and Magath¹² showed that formation of urea and deamination of amino acids in the body are dependent on the liver. These experiments explain the significance of a relative decrease in the urea nitrogen and increase in the amino acid nitrogen in the presence of damage to the liver. The low urea nitrogen, high amino acids, high bilirubin and the fluctuations of the blood sugar all pointed to an advanced degree of disintegration of liver function. Just as the pathologic changes observed in the liver of a recovered patient are not quite as extensive as those from an autopsy specimen, so also the chemical findings are not as striking as is seen in fatal cases.

12. Bollman, J. L.; Mann, F. C., and Magath, T. B.: *Am. J. Physiol.* 69: 371 (July) 1924; 78: 258 (Oct.) 1926.

OTHER LABORATORY FINDINGS

On admission the blood hemoglobin was 14.9 Gm., red blood corpuscles 5.5 million and white blood corpuscles 29,400, of which 84 per cent were polymorphonuclear leukocytes. The red cell count and hemoglobin were affected by intestinal bleed-

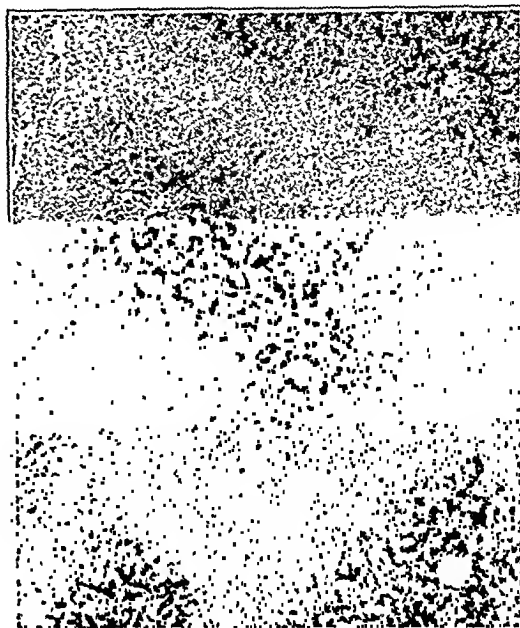


Fig. 6.—Second biopsy specimen, showing fat laden liver cells occupying half of each lobule around the central vein; $\times 55$. (Fat stain with scarlet red.)

ing late in the course of the disease. The leukocyte count gradually rose to 38,000 on February 7 and then slowly fell to 12,000. Daily examinations of the urine showed an occasional trace of albumin; sugar was positive on many occasions, and acetone was detected only once. Bilirubin was positive

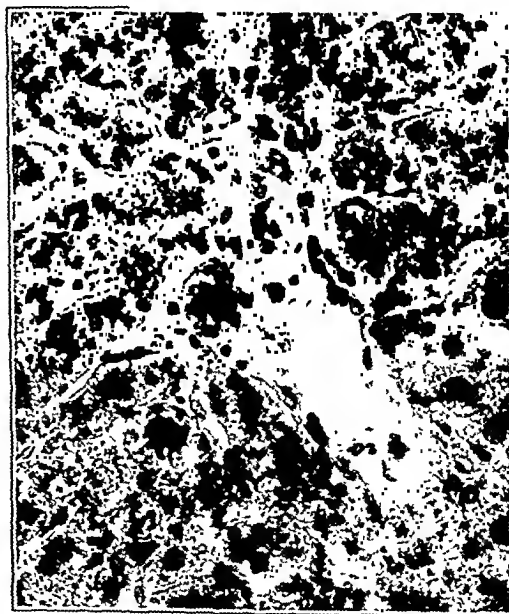


Fig. 7.—Second biopsy specimen, showing fat droplets within the liver cells; $\times 300$.

during the first few days, and urobilin was consistently positive up to February 24. The renal function as shown by the phenolsulfonphthalein test was 60 per cent in two hours on February 6, February 17 and March 15. No casts were found. Cultures of the abdominal wound were positive for *Staphylococcus citreus* on six occasions. *Staphylococcus aureus* was

cultured once from the blood. Blood agglutination tests against *Eberthella typhosa*, *Proteus* X 19, *Salmonella enteritidis* and *Brucella abortus* were all negative.

PATHOLOGIC OBSERVATIONS

The pathologic examinations were made by Dr. C. H. Hu. The first biopsy revealed that the liver architecture was normal. The liver cells in the central three fourths or four fifths of each lobule showed very distinct cell borders and clear cytoplasm in which the granules were gathered into a small clump situated in the neighborhood of each nucleus, while the rest of the cytoplasm contained very few granules. Toward the periphery of the lobule the liver cells were less clear, their cytoplasmic granules became more uniformly distributed and the cell borders were less conspicuous. The liver cells in the central portion of the lobule also contained a small amount of yellowish pigment, which was absent in those at the periphery. There was no evidence of cell necrosis.

The sinuses were very narrow or collapsed. The Kupffer cells were inconspicuous. Occasionally one such cell in the central portion of the lobule contained a yellowish pigment.

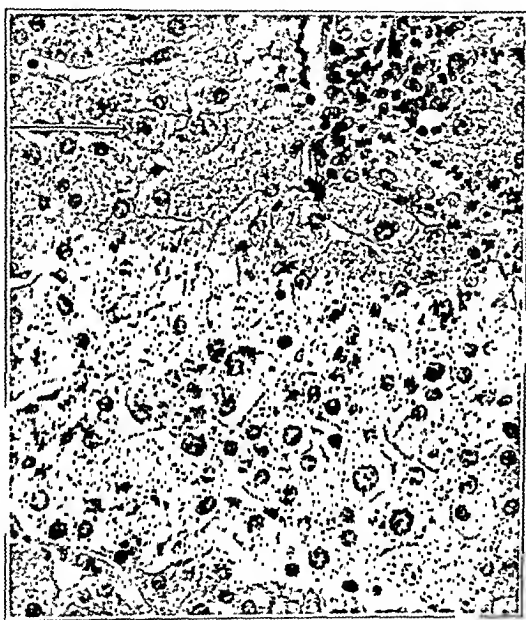


Fig. 8.—Second biopsy specimen, showing stage of recovery with small bile duct and mild hepatitis above and junction of normal liver cells with those containing fat below; $\times 300$. Mitosis indicated by arrows.

The periportal spaces showed no striking change with the exception of infiltration by a few polymorphonuclear leukocytes and lymphocytes. The bile ducts were normal. The diagnosis was central fatty change of the liver, slight hepatitis.

The second biopsy revealed similar general microscopic features, but the following differences may be noted:

1. The clear cell central zone was smaller. It represented about one half instead of three fourths or four fifths of a lobule.

2. Infiltration of the polymorphonuclear leukocytes, lymphocytes and plasma cells was slightly more conspicuous.

3. The nonclear cells adjoining the clear cell zone showed frequent mitosis. Mitoses were also sometimes observed in the clear cells.

Frozen sections of both biopsy specimens stained with scarlet red were studied. They showed that the clear cells were filled with fat globules, most intensive in the middle one third to one half of the lobule and surrounded by a less intensive middle zone, bordering on the unaffected cells near the portal spaces. The diagnosis was central fatty change of the liver, slight hepatitis.

SIGNIFICANCE OF PATHOLOGIC FINDINGS

At the first operation there was a small amount of clear yellowish green fluid in the peritoneal cavity. The liver was normal in size and color. A small piece of tissue for biopsy was taken from the inferior margin. Except for its pallor it was not remarkable in appearance. During the second operation, nine days later, a large amount of bile tinged ascitic fluid was removed by suction. The liver was definitely smaller and a yellow tinge was apparent. The lobulations were normal and the site where tissue was removed for the first biopsy was healed. No nodular elevations were found, and the surface was smooth. A second specimen for biopsy was taken from the inferior margin of the liver. Grossly, the piece of tissue appeared lighter in color than the previous one but was otherwise not remarkable. From the pathologic report and accompanying photomicrographs, it was clear that the biopsies did not show areas of necrosis and that only a slight degree of hepatitis was present. The predominant lesion in both specimens was one of definite fatty degeneration involving four fifths of the liver cells around the central vein of each lobule in the first one and only one half of the liver cells in the same areas in the second. The affected cells were swollen with vacuoles of fat while a rim of cells around the portal spaces remained unaffected. It seemed definite that most of the fat laden cells may return to normal, when not irreparably damaged, without pronounced changes in the structure of the liver as reported in cases of nodular hyperplasia by Umber,¹³ Miller and Rutherford,¹⁴ Whipple¹⁵ and Pool and Bancroft.¹⁶

CLINICAL COURSE AND TREATMENT

It was of great importance that we demonstrated this patient on Jan. 25, 1941 to our students in discussing another subject. At that time she stated that she had had vomiting on and off through the whole pregnancy but that there had been no vomiting for several weeks. Loss of appetite and general weakness for one week before admission were sufficient to compel her to stay in bed. There was no icterus or other complaints. She contracted an infection of the upper part of the respiratory tract on January 25, and vomiting of coffee ground material began on January 26. On admission, vomiting of material containing blood, icterus and drowsiness were the outstanding findings. The temperature, pulse and blood pressure were within normal limits, and the physical examination revealed nothing of importance except the respiratory infection. The history of persistent vomiting for four days and the increase in drowsiness to the point of stupor were of course significant. Termination of the pregnancy as soon as the diagnosis of acute yellow atrophy of the liver is established is recommended by De Lee.¹⁷ The symptoms, the clinical findings and the presence of cephalopelvic disproportion decided the immediate course of treatment. As delivery could not be expected for hours or days, a cesarean section was performed, and during the operation removal of a piece of liver tissue for biopsy seemed justifiable. Unfortunately, in her drowsy state she was uncooperative to the use of local anesthesia, and gas and oxygen had to be used, supplemented by a small amount of ether. During the active course of the disease the blood sugar was determined several times a day before dextrose infusions. For twenty-five days she received from 210 to 370 Gm. of dextrose daily by intravenous infusions, mostly in the form of 20 per cent in isotonic solution of sodium chloride. In spite of the large amounts of dextrose given, the blood sugar was low and the patient had frequent symptoms of hypoglycemia. Small doses of insulin, 5 to 10 units, were given together with the infusions, in the hope that the sugar would be better utilized. It was not probable that hypoglycemia was due to the very small amounts of insulin given because this condition also occurred when no insulin was being used, and the failure of

13. Umber, F.: *Deutsche med. Wchnschr.* 45:537 (May 15) 1919.
14. Miller, J., and Rutherford, A.: *Quart. J. Med.* 17:81 (Oct.) 1923.

15. Whipple, A. O.: *Am. J. Surg.* 6:655 (May) 1929.
16. Pool, E. H., and Bancroft, F. W.: *Surg., Gynec. & Obs.* 37:44 (July) 1923.

17. De Lee, J. B.: *Principles and Practice of Obstetrics*, ed. 2, J. P. L. delphia, W. B. Saunders Company, 1938, p. 423.

the liver to store glycogen must have played an important role. On one occasion when the blood sugar was 280 mg. with sugar and acetone in the urine, 10 units of insulin was given. The blood sugar fell to 26 mg. within two hours, and the patient was in hypoglycemic shock. Blood transfusions of 200 to 400 cc. were given on eleven occasions in twenty-two days. The violent and continued coughing of the patient resulted in a complete separation of the abdominal wound on two occasions. During the repair of the first separation, a further study of this obscure liver condition by biopsy, with the patient in good condition, seemed desirable and harmless. Bleeding from the upper part of the gastrointestinal tract, which occurred after the second separation of the wound, complicated the picture. The prothrombin time was normal at the time of bleeding. Sulfanilamide was given cautiously, only 6 Gm., and discontinued. Sulfapyridine was given on February 13, 6 Gm. in twenty-four hours, and discontinued because of gastrointestinal hemorrhage. Throughout the entire course of the disease, opiates were administered in varying amounts as necessary. Thiamine hydrochloride 5 mg. twice daily was given during the first few days and later the dose was reduced to 5 mg. daily. The blood pressure and the fundi were found to be normal, but one week after operation, when the blood pressure was elevated, the fundi showed hypertensive changes

indicated liver damage. It is fair to assume that during the next two days, when the patient was in critical condition and when the chemical findings of the blood showed greater impairment of liver function, that the extent of liver damage was also correspondingly increased. The second biopsy showed intensive fatty degeneration but involving only one half of each lobule, and at this time the chemical findings in the blood also indicated improvement. From this and the observations of others in fatal cases there seems to be a rather definite correlation between the extent of fatty degeneration and the results of the blood chemical tests. Stander¹⁸ reported a fatal case which was more severe but otherwise similar to ours. One of the cases reported by Baens and Espinola¹⁹ also was similar.

Sheehan²⁰ reported 6 fatal cases very similar, if not identical, to this one as a separate entity apart from true acute yellow atrophy and suggested the name obstetric yellow atrophy. We are not willing to do this on the basis of present knowledge, because the clinical course is identical, and the location and general type of lesion are the same. We may have to change our conception,

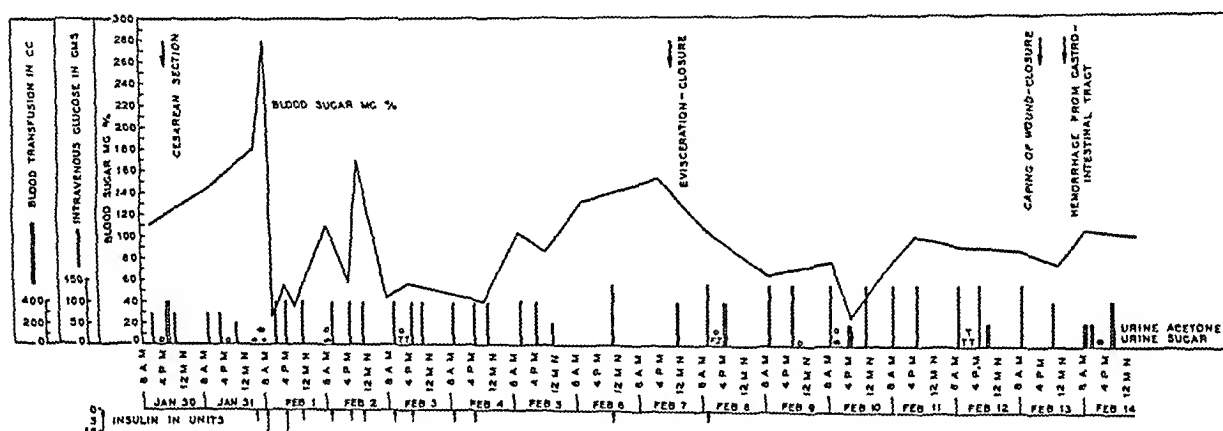


Fig. 9.—Fatty degeneration of liver in pregnancy. Blood sugar, dextrose therapy and transfusion.

of the retinal vessels. The irregular heart beat persisted throughout the course of the disease. An electrocardiogram taken on March 7 suggested myocardial damage, while a subsequent examination on March 19 was normal. The bromsulphalein and hippuric acid tests repeatedly showed impairment of liver function until March 7.

COMMENT

The demands on the liver are especially insistent in the last half of pregnancy. This patient had not been eating well for ten days. An infection of the upper part of the respiratory tract in the presence of impaired liver function may well have been the etiologic factor.

The importance of early recognition and treatment of this condition cannot be overemphasized. Too little attention is frequently given to mild symptoms. The occurrence of fatigue and loss of appetite in a woman near term is significant. With the appearance of icterus, investigation is indicated, and, if drowsiness ensues, the diagnosis of liver damage is almost certain. The life of the patient depends on vigorous treatment with dextrose and termination of the pregnancy by the most conservative means. Also the many and timely blood transfusions contributed to the recovery of the patient.

It will be noted that the area of fatty degeneration involved three fourths to four fifths of the liver lobules in the first biopsy, at the time when the blood chemistry

but at this time it seems to be a matter of degree; that is, acute fatty degeneration of the liver is one stage in the process of necrosis. It seems reasonable to conclude that the dose of the hormone, toxin, poison, infection or combination of these factors could be insufficient to cause actual necrosis but still be sufficient to be usually fatal.

The cause of both ascites and hemorrhage from the upper part of the gastrointestinal tract was not clear. There was no cirrhosis of the liver to account for these conditions. The renal function as determined by the phenolsulfonphthalein test was normal. The ascites in this case might have been due to the extremely low level of serum albumin. The hematemesis was probably not caused by varices. The duodenal tube did not cause the bleeding, as it continued after the tube was withdrawn and stopped after the tube had been replaced. Penner and Bernheim²¹ explained bleeding of this nature in cases of shock due to peritonitis, diabetic acidosis, hemorrhage or operation on the basis of a

18. Stander, H. J., and Cadden, J. F.: *Am. J. Obst. & Gynec.* **28**: 61 (July) 1934.

19. Baens, Alfredo, and Espinola, Noe: *J. Philippine Islands M. A.* **17**: 679 (Nov.) 1937.

20. Sheehan, H. L.: *J. Obst. & Gynaec. Brit. Emp.* **47**: 49 (Feb) 1940.

21. Penner, Abraham, and Bernheim, A. I.: *Acute Postoperative Esophageal, Gastric and Duodenal Ulcerations: Further Study of Pathologic Changes in Shock*, *Arch. Path.* **28**: 129 (Aug) 1939.

resuscitation procedures following failure of some other method. A brief report¹ on the phenomenon of asphyxial resuscitation will appear shortly.

COMMENT

In a paper reporting physiologic studies in experimental asphyxia and drowning, Loughheed, Janes and Hall² state (p. 426):

Asphyxia may be maintained for only a comparatively short period of time if recovery is to take place. This time varied with the individual animal but rarely exceeded four minutes;

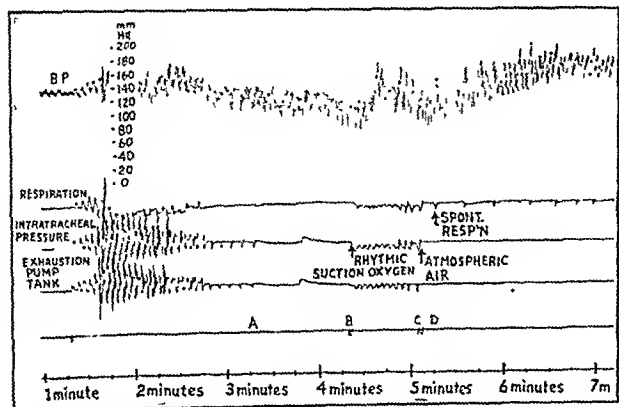


Fig. 7 (dog 22).—Nitrogen inhalation asphyxia by way of intratracheal tube: A, respiration ceases. B to C, rhythmic suction at 8 mm. of mercury pressure with oxygen inhalation. D, spontaneous respiration.

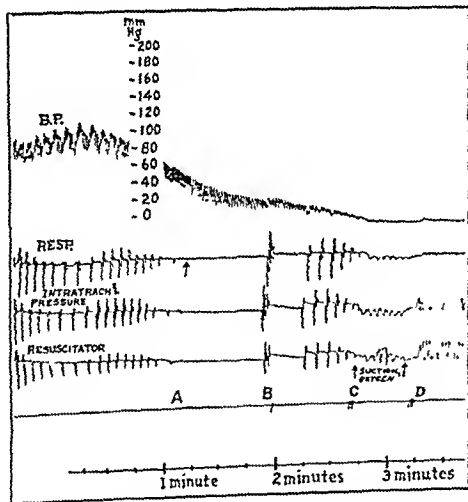


Fig. 8 (dog 22).—Nitrogen inhalation asphyxia by way of intratracheal tube: A, respiration ceases. B to C, asphyxial gasps. C to D, rhythmic suction at 8 mm. of mercury pressure with oxygen inhalation fails to resuscitate. D, resuscitator with oxygen fails to resuscitate.

in some animals recovery has occurred after the trachea has been clamped for seven minutes, while other animals failed to recover after temporary asphyxia of two minutes' duration. Another interesting feature was observed in the time interval between the cessation of respiratory efforts during asphyxia and the cessation of expulsive cardiac beats. This interval varied only from eleven to seventeen seconds. If the asphyxia was maintained four or five seconds longer, resuscitation was of no avail.

1. Artificial respiration: Asphyxia was maintained by clamping the trachea for varying periods of time. As noted in the

previous section, the periods of asphyxia after which recovery would take place depended upon the critical interval after the cessation of the respiratory efforts (eleven to seventeen seconds). If the asphyxia was relieved during this short period, spontaneous recovery took place in the great majority of cases. If, however, the asphyxia was maintained for slightly longer

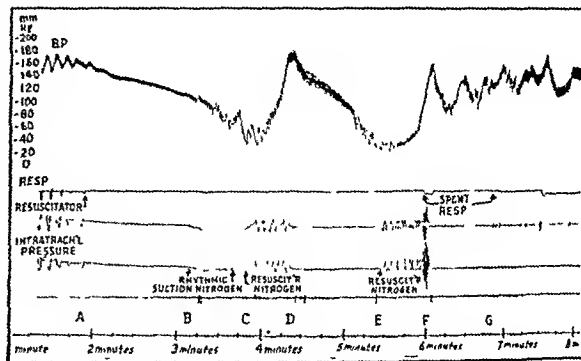


Fig. 9. (dog 20).—Nitrogen inhalation asphyxia by way of intratracheal tube: A, respiration ceases. B to C, rhythmic suction at 8 mm. of mercury pressure with nitrogen inhalation; blood pressure continues to fall. C to D, resuscitator with nitrogen. E to F, resuscitator with nitrogen started again. F, spontaneous respiration.

periods of time (even a few seconds) spontaneous recovery did not take place. In this period where spontaneous recovery did not occur, artificial respiration if instituted immediately practically always resulted in successful recovery. The longer the period of asphyxia, the longer artificial respiration had to be maintained. It must be emphasized, however, that successful artificial respiration was possible only when started within a few seconds after the time when spontaneous recovery could take place. Precisely the same criteria had to be applied in the cases where asphyxia was produced by experimental drowning.

As a result of our experiments we consider that prompt, adequate and prolonged artificial respiration is the fundamental treatment for drowned, asphyxiated or electrocuted persons. In the case of drowning the additional procedures as outlined above are recommended for the reasons stated.

Our findings support the view that manual artificial respiration must be instituted early to effect resuscitation when the respiration has ceased. However, in a

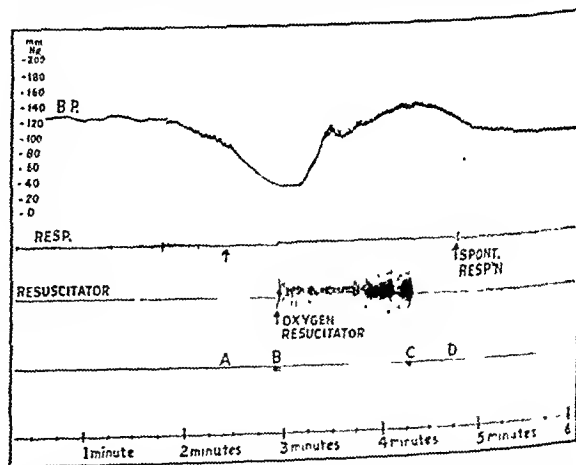


Fig. 10 (dog 5).—Nitrogen inhalation asphyxia at the mask: A, respiration ceases. B to C, resuscitator with oxygen; notice the sharp recovery of blood pressure by resuscitator in contrast to the slow recovery by manual artificial respiration (fig. 1). D, spontaneous respiration.

few instances manual artificial respiration with oxygen was effective after a longer period of time following cessation of respiration than the critical period of Loughheed, Janes and Hall. Likewise, resuscitation with

1. Thompson, S. A., and Birnbaum, G. L.: The Phenomenon of Asphyxial Resuscitation; Resuscitator with Inert Asphyxiating Gases. Preliminary Report, Proc. Soc. Exper. Biol. & Med. 48: 203-204, 1941.
2. Loughheed, D. W.; Janes, J. M., and Hall, G. E.: Physiological Studies in Experimental Asphyxia and Drowning. Canad. M. A. J. 40: 423 (May) 1939.

rhythmic insufflation of oxygen was possible at a longer period after the cessation of respiration. Rhythmic inflation and suction of oxygen was by far the most effective of the methods and at very much longer periods after cessation of respiration.

We have merely touched on the subject of resuscitation with inert (asphyxiating) gases. In subsequent papers of the series this phenomenon and its mechanism will be taken up in detail. It will then become even more evident that the suck and blow mechanism, within safe limits of pressure, rests on sound physiologic principles.

Henderson and Turner³ have found that suck and blow mechanism, using pressures of plus 15 and minus 15 mm. of mercury, could do no serious harm to the lung. However, they believe that manual artificial respiration is more effective than mechanical resuscitation.

Manual artificial respiration is a valuable procedure and should be immediately instituted when the respiration has ceased and continued until respiration returns or until other and more efficient facilities are available. We have found, however, that positive-negative resusc-

tures used gives a distinctly greater pulmonary ventilation than manual artificial respiration or rhythmic inflation. Overventilation and acapnia (carbon dioxide deprivation) is eliminated as a possibility by the addition of 5 to 7 per cent of carbon dioxide to the oxygen.

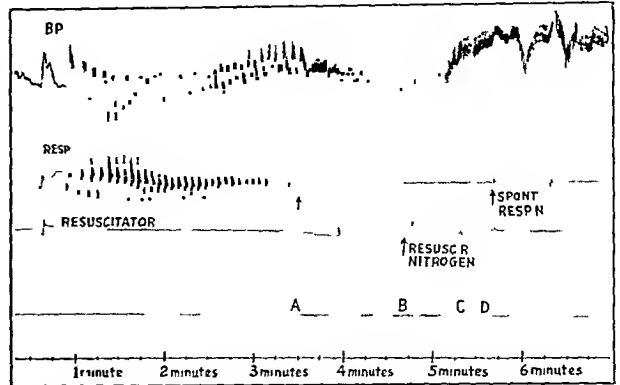


Fig 12 (dog 37) —Mechanical obstruction asphyxia by clamping intra tracheal tube the phenomenon of asphyxial resuscitation (resuscitation with inert gas): A, respiration ceases B to C, resuscitator with nitrogen, notice recovery of blood pressure D, spontaneous respiration occurs, animal now allowed to breath atmospheric air.

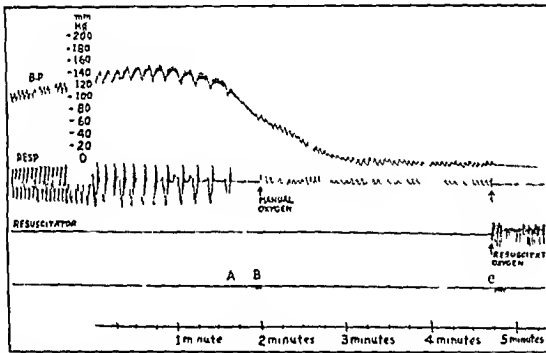


Fig 11 (dog 11) —Mechanical obstruction asphyxia at the mask. A, respiration ceases B to C, manual artificial respiration with oxygen inhalation fails C, resuscitator with oxygen fails.

Summary of One Hundred and Six Experiments with Different Resuscitative Procedures

	Oxygen			Nitrogen		
	Suc-cess	Fail-ure	Per-centage	Suc-cess	Fail-ure	Per-centage
Manual artificial respiration	6	5	55	1	6	15
Rhythmic inflation	7	2	78	2	10	17
Rhythmic suction	4	1	80	1	4	20
Resuscitation (rhythmic inflation and suction).	21	1	95	30	5	85

tation is superior to manual artificial respiration as a life-saving measure. Another feature of positive and negative resuscitation is its efficacy in advanced asphyxia with cardiac failure. We have been able to resuscitate the circulation and respiration many times by a combination of mechanical resuscitation with oxygen plus heart massage; these data will be reported in another paper.

When in asphyxia the respiration has ceased, rhythmic inflation and suction of the lungs at the pres-

Moreover, before respiration has resumed, rhythmic resuscitation with positive and negative pressure does not depend on muscle tonus of the respiratory muscles (as do manual artificial respiration, rhythmic inflation alone or rhythmic suction alone) for adequate pulmonary ventilation.

While it is true that mechanical suck and blow resuscitation may work "out of step" with the breathing animal, we advise the use of a resuscitator only when the respiration has failed; when respiration is still going on, inhalation of oxygen or oxygen-carbon dioxide is indicated. When respiration has been restored and acts "out of step" with a mechanical resuscitator, it indicates the successful return of spontaneous respiration and it is time to desist from the use of mechanical resuscitation and to use inhalation.

CONCLUSIONS

1. In advanced asphyxia, after cessation of respiration, rhythmic inflation and suction of oxygen or oxygen-carbon dioxide at safe pressures is definitely

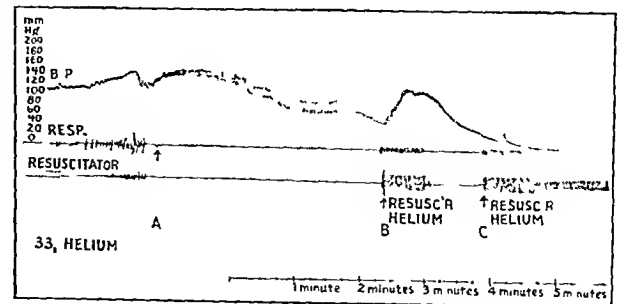


Fig 13 (dog 33) —Helium inhalation asphyxia by way of intratracheal tube A, respiration ceases B, resuscitator with helium started three and a half minutes after cessation of respiration, a rise and then a fall of blood pressure occurs when the resuscitator is stopped C, resuscitator with helium started again; failure to resuscitate

superior to manual artificial respiration or rhythmic inflation.

2. Rhythmic inflation and suction regularly produce resuscitation even with inert (asphyxiating) gases.

³ Henderson, Yandell, and Turner, J. McC: Artificial Respiration and Inhalation The Principle Determining the Efficiency of Various Methods, J. A. M. A 116: 1508 (April 5) 1941.

Clinical Notes, Suggestions and New Instruments

SEVERE ARSENICAL REACTION ENCOUNTERED IN THE FIVE DAY TREATMENT FOR EARLY SYPHILIS

HERBERT RATTNER, M.D.,
AND
ALFRED B. FALK, M.D.,
CHICAGO

This is to record the first serious reaction affecting the kidneys, liver and heart from the use of mapharsen in the treatment of early syphilis by the five day massive dose method. One of the significant facts noted in our experience of 348 patients treated by this method, and among the 1,150¹ or more patients treated similarly by the Middle Western Cooperative Group, has been the lack of serious damage to important parenchymatous organs. There have been reports of several cerebral accidents,² some of them fatal, and minor side effects have been encountered frequently—nausea, emesis, headache, fever, painful arms and toxic eruptions. Aside from transitory albuminuria and a slight elevation of the icteric index, however, there have been no reports of a reaction in which the toxic manifestations were those of an acute glomerulonephritis, anuria, uremia, hepatitis, ileus and pericarditis.

REPORT OF CASE

A Negro aged 23 had a penile chancre of four weeks' duration from which *Treponema pallidum* was demonstrated and a papular syphiloderm of the body of one week's duration. The blood tests gave strongly positive reactions with a quantitative titer of 40 Kahn units. Except for an attack of typhoid in 1933, he had had no previous illnesses. His general physical condition was excellent. The laboratory studies, which included a complete blood count, blood chemical determination, urinalysis including a urobilinogen determination, icteric index determination and a roentgenogram of the chest, gave results that were



Fig. 1.—Appearance of the patient during the acute phase of his illness.

within normal limits. For these reasons it was decided that his condition was suitable for the intensive five day treatment by the intravenous drip method.

From the Department of Dermatology, Cook County Hospital, and the Department of Public Health, State of Illinois, R. R. Cross, M.D., Director, and Herman Soloway, M.D., Venereal Disease Control Officer; with the cooperation of the United States Public Health Service.

1. Information supplied by D. C. Elliott, M.D., United States Public Health Service.

2. Leifer, William; Chargin, Louis, and Hyman, H. T.: Massive Dose Arsenotherapy of Early Syphilis by the Intravenous Drip Method, *J. A. M. A.* 117:1154 (Oct. 4) 1941. Elliott, D. C.; Baehr, George; Shaffer, L. W.; Usher, G. S., and Lough, S. A.: Massive Dose Therapy of Early Syphilis, *ibid.* 117:1160 (Oct. 4) 1941.

Throughout the first day of treatment he along with 4 others undergoing treatment at the same time experienced some discomfort from nausea, emesis, headache and pain in the arm, but he was able to take the full dose for the day of 0.24 Gm. of mapharsen dissolved in 2,000 cc. of 5 per cent dextrose solution. In the evening the emesis became more frequent and he became lethargic. The following morning there was a large quantity of albumin in the urine; later in the day he



Fig. 2.—Appearance of the patient one month later.

ceased to void, and during the next eighty hours there was complete anuria and the gradual development of edema of the face. Then dyspnea and orthopnea developed and later moist rales were heard in the base of the left lung. On the fourth day he suffered a generalized convulsion, and after a few hours uremic frost appeared on the nasolabial folds. By this time he was voiding only 500 cc. of urine, which still contained albumin and red blood cells. The nonprotein nitrogen was 170 mg. per hundred cubic centimeters and the creatinine was 16.8 mg. per hundred cubic centimeters.

On the sixth day there was evidence of hepatitis—enlarged liver, icteric scleras and an icteric index of 25—and bothersome singultus and emesis which persisted for two weeks. Ileus developed on the ninth day, and there was considerable distention for forty-eight hours. Then on the eleventh day there appeared a pericardial rub which persisted for three weeks. Despite the later developments, the general well-being of the patient seemed to improve after the first week. There was no precordial pain and he was now voiding 2,000 cc. of urine in twenty-four hours.

He received treatment with digitalis, adrenal cortex extract (eschatin), a prostigmine compound, blood plasma, isotonic and hypertonic fluids intravenously, deep diathermy administered over the renal areas, suction with a Wangenstein apparatus and various other supportive measures.³

The patient five and one half months after the reaction showed no effects of it whatever. The blood test gave a negative reaction on the tenth week and has remained negative.

SUMMARY

A case was seen in which acute glomerulonephritis, anuria, uremia, hepatitis, ileus and pericarditis developed from the use of mapharsen in the treatment of early syphilis by means of the intensive five day treatment method. It is the first such reaction encountered among some 1,150 patients treated similarly by the Midwestern Cooperative Group. The patient recovered from the reaction. We have had no fatalities in 348 cases treated by this method.

25 East Washington Street.

3. Drs. A. B. Rimmerman and Arthur Bernstein of the medical staff of the Cook County Hospital helped in the management of the patient, and, after further observations, will report on the medical aspects of the case.

BASAL METABOLISM IN THE SAME PERSON AFTER
AN INTERVAL OF FIFTY YEARS

ADOLF MAGNUS-LEVY, M.D., NEW HAVEN, CONN.

My basal metabolism was first examined in Zuntz's laboratory in 1891 at the age of 26 years. When I was 76 I had the opportunity of having it reexamined by Dr. Walter A. Boothby when I was at the Mayo Clinic in 1941 to give a lecture. During the interval, no measurements were made. Although the figures reveal nothing new, it might be of interest to publish them since they are unique.

The decline of basal metabolism with advancing age, established by Falk and Magnus-Levy,¹ has been subsequently confirmed by a number of workers. Du Bois² quotes values of 39.5 calories per square meter per hour at 20 to 30 years and 35.5 calories per square meter per hour at 70 to 76 years, a decrease of 10 per cent.

My record is given in table 1.

The values for surface area are based on Du Bois's formula. The decline in weight has been 7.5 Kg. and is most probably due to dwindling of the musculature, since my fat tissue has always been scarce and since my muscles, which are still firm, were exceedingly well developed and well trained in my youth. The decrease in energy output when expressed in

TABLE 1.—Basal Metabolism of the Author

Year	Age, Yr.	Oxy- gen, Cc. per Min.	Carbon Dioxide, Cc. per Min.	Re- spiratory Quo- tient	Height, Cm.	Weight, Kg.	Sur- face Area, Sq. M.	Calories		
								Per Hr.	Kg. per Hr.	Sq. M. per Hr.
1891	26	231.3	192.5	0.83	167.0	67.5	1.76	67	0.99	38.1
1941	76	176.0	158.4	0.90	165.5	60.0	1.65	52	0.87	31.5
Differ- ence	50	-24%				-11%	-6%	-22%	-12%	-17%

TABLE 2.—Basal Metabolism of Five "Professors"

"Professors"	Age, Yrs.	Calories, Sq. M. per Hr.	Deviation from Standard Curve		
			Aub. Du Bois, ³ per Cent	Mayo Clinic (Boothby ⁵), per Cent	Harris- Benedict, ⁵ per Cent
Zuntz ¹	41	33.5	-14	-13	-7
	70	30.2	-10		
Magnus-Levy	26	38.1	-4	-6	-2
	76	31.5	-11		
Lusk ⁶	44	42.8	+11	+13	+24
	58	32.7	-12	-9	-9
Benedict ⁵	38	38.2	-3	-1	+6
	67	32.7	-12	-9	-9
Du Bois ²	30	38.1	-4	-4	0
	58	34.5	-7	-4	-4

calories per square meter per hour has been 17 per cent: 38.0 to 31.5. These figures are below the Aub and Du Bois³ standard both in youth (-4 per cent) and in old age (-11 per cent). I was not subjected to undernourishment in Germany in either 1939 or 1940. My blood pressure is 170 systolic and 80 diastolic and my pulse rate is 40 per minute. The latter has always been low, having been less than 50 for twenty to thirty years.

There have been metabolism figures published for another "old professor," my beloved teacher Nathan Zuntz.⁴ His seventieth year is compared to his forty-first and sixty-third years. The figures for weight, and its decline, are almost identical with mine, as are also those of oxygen intake and calories per square meter per hour, if one calculates them according to Du Bois's formula instead of Meel's formula, which was used by Zuntz himself. From 41 to 63 years of age his oxygen consumption and energy output varied only slightly, i. e. within a range of a few per cent. At 70 there

From the Department of Physiology, Yale University School of Medicine.

1. Falk and Magnus-Levy, Adolf: Arch. f. Anat. u. Physiol., suppl., 1899, p. 314.

2. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1936.

3. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Arch. Int. Med. 19: 823-831 (May) 1937.

4. Zuntz, Nathan, and Loewy, Adolf: Berl. klin. Wchnschr. 53: 825-829, 1916; Biochem. Ztschr. 90: 244-264, 1918.

had occurred a decrease of 10 per cent in weight, of 15 per cent in oxygen consumption and of 13 per cent in the output of calories when expressed in terms of surface area. Zuntz, without referring to old age, ascribed the decline exclusively to undernutrition during the World War (1916-1917). That period, however, affected him only in a limited way, even though it influenced Loewy, then only 53 years of age, tremendously.

Table 2 presents the figures for a number of "professors"⁵ and shows their deviation from several standard curves.

Council on Pharmacy and Chemistry

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
STATEMENT.

AUSTIN E. SMITH, M.D., Acting Secretary.

The Council on Pharmacy and Chemistry of the American Medical Association records with deep sorrow the death, Jan. 31, 1942, of

Soma Weiss

On January 31 Soma Weiss died at the age of 43 of a spontaneous subarachnoid hemorrhage. In his premature death the medical profession lost one of its greatest leaders. He was a persuasive and stimulating teacher, a resourceful clinician, a brilliant investigator whose interests and contributions extended to the most diverse fields of medical science. Few men have exerted so great an influence or have been so admired and beloved. To his clinic went many of the most able young men in this country. He offered them the wealth of his clinical experience and the stimulation of his constructive imagination. He was their counselor and friend. No one of them departed without enthusiasm or without the desire to contribute to medical teaching and to the advancement of medical science. Today many of his former interns and residents are leaders in their own right and are carrying to others the light which they received from him.

To the work of the Council on Pharmacy and Chemistry Soma Weiss brought a unique experience. While still a young student in Hungary he served for three years as a Research Fellow in Physiology and Biochemistry at the Royal Hungarian University in Budapest. He left Hungary mainly because the disturbed political condition offered a discouraging outlook for study and research. Almost immediately after his arrival in this country he became associated with Dr. Robert A. Hatcher, who was probably one of the first to recognize his remarkable capacity. For the next three years while still a student at Cornell he served as assistant in pharmacology and took an active and often a leading part in many important investigations. After graduation he went to Bellevue Hospital, where he continued his research work. This fundamental training and experience in pharmacology had a significant influence in all his subsequent investigations and clinical activities. At a time when the chief emphasis in teaching was on diagnosis and prognosis, Soma Weiss was one of the few clinicians who could bring exact pharmacologic knowledge to the bedside and who could utilize adequately pharmacologic techniques in the vast field of practical therapeutics. At Bellevue, and later in the City Hospital and at Peter Bent Brigham Hospital in Boston, he was exposed to an immense amount of clinical material, which gave ample scope for the application of his methods. With such a background he was able to contribute first hand information concerning most of the problems which came for consideration to the Council on Pharmacy and Chemistry. His fellow members on the Council realize fully what a tremendous loss to medicine his death involves, but they feel also, and more keenly, the loss of a much beloved friend and a wise counselor to whom all freely turned for advice and help.

5. The details are presented in:

Boothby, W. M.; Herkerson, J., and Dunn, H. L.: Am. J. Physiol. 116: 463-484 (July) 1936.

Harris, J. A., and Benedict, F. G.: Carnegie Institution of Washington, Publication 279, 1919.

Lusk, Graham, and Du Bois, E. F.: J. Physiol. 59: 213-216 (Oct.) 1924.

Benedict, F. G.: Am. J. Physiol. 85: 650-664 (July) 1928.

Du Bois, E. F.: Personal communication to the author.

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SATURDAY, APRIL 18, 1942

THE VENEREAL DISEASE PROBLEM IN WAR

Invariably in past wars there has been an increase in the rates for the venereal diseases. The Annual Report of the Surgeon General of the United States Army for the fiscal year 1941 shows that the venereal disease rate increased in the recent prewar period of mobilization from 29.6 per thousand men in 1939 to 42.5 per thousand men in 1940.

Infected persons in the civilian population, particularly prostitutes, are links in the chain of infection of the armed forces with syphilis and gonorrhea. Frequently the venereal disease rate in the Army and Navy is comparable to the incidence and prevalence of syphilis and gonorrhea in the civilian population in the area in which the armed forces are located. Therefore the civilian program for control of venereal disease must be maintained at the optimum effective level during war.

The War Department is preparing to meet this problem. A venereal disease control officer will be assigned to each corps area headquarters to stimulate work against venereal disease. Furthermore, army venereal disease control officers will be appointed to each command with a strength of more than twenty thousand men. These new control officers will work with health departments and other civilian agencies. Attempts will be made to examine all contacts with infected men and to treat those who are found infected. The program will also include the strengthening of prophylactic measures, the provision of more adequate physical inspection to detect venereal diseases early, improvement in methods for the diagnosis and treatment of infected military personnel, provision of additional recreational facilities in cooperation with other military agencies, and intensification of the educational program.

A cardinal principle of epidemiology in the control of communicable diseases is limitation of the number of contacts between infected, potentially infected and healthy persons. This principle applies in syphilis and gonorrhea as much as it does in other communicable diseases. Already there is evidence that some physicians

have placed in the hands of irresponsible prostitutes certificates with the connotation that these women are free from the venereal diseases. The scientific evidence available indicates that certification of this kind is worthless. Any local, municipal system that encourages such certificates trifles not only with the health of its civilian population but also with that of the Army and Navy.

THE ADJOURNED MEETING OF THE 1940 PHARMACOEPIAL CONVENTION

On April 7 the adjourned session of the decennial U. S. Pharmacoepeial Convention reconvened in Cleveland to permit discussion of proposed amendments to the constitution and by-laws. This meeting was in accordance with instructions given by the 1940 convention ". . . to meet at the call of the Board of Trustees to receive the report of the Committee on Constitution and By-Laws. . . ." The committee, which consisted of nine voting members of physicians, pharmacists and one representative of a governmental agency, had been charged with preparing a draft of the new constitution and by-laws promulgated at the 1940 convention. The object of the changes is to reduce the number of delegates to insure a representative delegation and to simplify the general methods of procedure for the convention proper.

The success of the meetings in Cleveland was largely due to the efforts of this committee and the understanding and cooperation of the board of trustees of the Pharmacopeia. This success was not marred by the knowledge that legal opinion had advised that amendments to the constitution could not be finally acted on until the 1950 decennial meeting of the convention. Although the by-laws could be voted on and adopted at the present meeting, none of the new by-laws could replace any of the terms of the present constitution concerning membership requirements, number of delegates or their appointment and terms of office, or the personnel elected at the 1940 meeting. The by-laws which existed at the termination of the latter meeting are effective until the 1950 meeting, but the new by-laws which were discussed and adopted in Cleveland will guide the organization and outcome of the 1950 meeting.

The constitution as read at the Cleveland session was simply received for presentation to the 1950 meeting. Of special interest are certain new statements in the by-laws. Under article II, membership, are the provisions "The members of the United States Pharmacoepeial Convention shall consist of accredited delegates representing the following institutions and organizations, and designated divisions of the federal government. . . . Each institution, organization and designated division of the federal government entitled to representation in the United States Pharmacoepeial Convention . . . shall be

entitled to one delegate or an alternate in the decennial meetings of the Pharmacopeial Convention. Each delegate or his alternate shall be an officer or member of the academic staff of the college or school, an active member of the association or society, or an employee of the division of the federal government which he represents. . . . A delegate shall not represent more than one college, school, association, society or division of the federal government."

Under the old by-laws, article I, chapter 5, there appeared the ambiguous statement "The General Committee of Revision shall consist of fifty members to be elected at the decennial meeting, together with the president of the convention, ex officio." At the recent convention the members voted that "The General Committee of Revision shall have a membership of sixty persons, of whom twenty shall be qualified in medical sciences and forty in pharmaceutical and allied sciences, together with the president of the Pharmacopeial Convention, ex officio, and the director of the Pharmacopeial Convention, ex officio."

Whereas former by-laws provided for the nominating committee to nominate the officers of the convention, the board of trustees and the general committee of revision, the new amendments state that the secretary of the nominating committee shall request all organizations entitled to representation to submit the names of individuals qualified for this work. Each submitted name must be accompanied by a statement depicting the qualifications of the nominee. Thus, when a delegate presents his credentials he will be offered a list of names of forty persons qualified in the medical sciences and eighty persons qualified in the pharmaceutical and allied sciences. Further nominations may be received from the floor and seconded by at least four delegates. At the final session of the decennial meeting, voting by ballot will be conducted.

No doubt such provisions as these will prevent a repetition of the confusion and doubtful motivations which prevailed in the 1930 assemblage. As the Pharmacopeia plays an ever increasingly important part in the enforcing of laws governing official drugs in interstate commerce, physicians and pharmacists should maintain their interest in providing the best pharmacopeia possible. Because of the significance of the Pharmacopeia to the practice of medicine the American Medical Association, through its Board of Trustees, its Council on Pharmacy and Chemistry and *THE JOURNAL*, has repeatedly urged efforts toward the development of a pharmacopeia most compatible with the needs of modern medicine. As we have stated before,¹ the adoption of this new constitution and by-laws will be a step toward facilitation of work, discouragement of self seeking, and the maintenance of a scientific spirit.

FEBRILE DESTRUCTION OF ANTIBODIES

A serious challenge to conventional theory on which fever therapy is based comes from the demonstration by Ellingson and Clark¹ of the University of Wisconsin that hyperpyrexia causes a significant lowering of specific antibody titer in experimental animals. In 1908 Rolly and Meltzer² tested the influence of artificial fever on the resistance of rabbits to experimental bacterial infections. Groups of 2 or more rabbits were given repeated sublethal inoculations of pneumococci, staphylococci, *Escherichia coli* or *Pseudomonas aeruginosa*. One animal of each group was kept at room temperature to serve as a control and the others were confined to a heated chamber. All the control animals died of the repeated sublethal inoculations. Of the 11 febrile animals (rectal temperatures were not recorded) but 4 died. This was taken as proof that the febrile state increases antimicrobial resistance.

According to the orthodox side chain theory of the time, this increase could mean only that fever increases specific antibody titer. This presumptive logical deduction from their data was confirmed by experimental tests. For example, 2 rabbits which had been inoculated with a cholera vaccine and confined for nine days in a heated box showed specific agglutinin titers of 1:200 and 1:500, or an average of 1:350. Two control rabbits similarly inoculated but kept at room temperature each showed an agglutinin titer of 1:200. Their conclusion that hyperpyrexia accelerates specific antibody production was soon quoted in textbooks of pathology and clinical medicine and became the basis for the widely prevailing belief that fever is a wise provision of nature automatically increasing bodily defenses against invading micro-organisms.

Clinical interest in this conclusion, however, was not fully aroused till von Wagner-Jauregg³ reported the beneficial effects of artificial malarial infection on tabes dorsalis and dementia paralytica. It was assumed that the resulting febrile state was responsible for the favorable results. This observation started a trend of clinical investigation and trial and led to the acceptance of artificial fever in the treatment of several infectious diseases.

The basic immunologic belief underlying this fever therapy, however, has not been without its critics. Ecker and O'Neal,⁴ for example, found that in rabbits immunized against typhoid vaccine the specific typhoid agglutinin titers were depressed fully one half as a result of hyperthermia. Hadjopoulos and Bierman⁵ found that the complement fixing antibodies of rabbits previously immunized against pyogenic cocci were similarly depressed.

1. Ellingson, H. V., and Clark, P. F.: *J. Immunol.* **43**: 65 (Jan.) 1942.

2. Rolly, F., and Meltzer: *Deutsches Arch. f. klin. Med.* **94**: 335, 1908.

3. von Wagner-Jauregg, Julius: *Psychiat.-neurol. Wehnschr.* **20**: 132, 251, 1918-1919.

4. Ecker, E. E., and O'Neal, M.: *Am. J. Pub. Health* **22**: 1050, 1922.

5. Hadjopoulos, L. G., and Bierman, William: *J. Lab. & Clin. Med.* **20**: 227 (Dec.) 1934.

1. The Pharmacopeial Convention of 1940, editorial, *J. A. M. A.* **114**: 2116 (May 25) 1940.

None of the earlier experimenters or critics used a sufficiently large number of animals or a sufficiently wide range of antigens to render their data statistically significant. Ellingson and Clark therefore repeated the earlier tests on groups of at least 12 rabbits, selecting such typical antigens as sheep erythrocytes, egg albumin and *Eberthella typhosa*. One series of 12 rabbits, for example, was given three intravenous injections of 5 cc. of 10 per cent washed sheep cells on successive days. Six of these were kept at room temperature, and the others given a severe fever (41.6 C., or 106.9 F., rectal temperature) for periods of four hours on each of the three days of inoculation. The fever was caused by placing the rabbits in well ventilated incubators. Composite data showed that hemolytic amboceptor was produced by both subgroups by the sixth day. In both groups the titer increased to a maximum by the twelfth day and then decreased, till about 50 per cent of the amboceptor had disappeared by the twentieth day. Throughout this process, however, the average titer of the fever group was but half that of the nonheated controls. Thus on the twelfth day the average control titer was 6,400 units of amboceptor, with but 3,840 units present in the febrile animals.

Even more striking differences were seen in the series of 12 rabbits given seven intravenous injections of typhoid vaccine. In this series the injections were made on alternate days. A rectal temperature of 41.5 C. (106.7 F.) was induced in half of the animals for eight hour periods daily for twenty-two days. Throughout the observation period of fifty-seven days the average titer of the febrile animals was rarely more than one-fourth that of the unheated controls. Thus on the twentieth day the average febrile typhoid agglutinin titer was 1:832, as contrasted with an average of 1:2,133 in the normal controls. On the fifty-seventh day the averages had fallen to 1:76 and 1:266 respectively. An equally striking febrile reduction in specific precipitin formation was recorded for groups of rabbits immunized against crystallized egg albumin.

Certain groups of previously immunized rabbits were given fever therapy for an eighteen hour period and examined immediately after this treatment. The average agglutinin titer was reduced three fourths by this heating. Under the influence of a daily fever the titer of these rabbits was further reduced to one eighth of the original by the eighth day. This febrile destruction of specific antibodies was also noted in groups of rabbits passively immunized against the typhoid bacillus.

From these data it would seem that artificial fever not only inhibits specific antibody formation but accelerates antibody destruction. The fact that artificial fever reduces antibody titer, however, does not justify the conclusion that fever therapy is without beneficial effects. Carpenter and his associates,⁶ for example,

have demonstrated that fever temperatures may actually kill gonococci and the spirochete of syphilis. Dyson⁷ and Shaffer⁸ have shown that the rate of proliferation of hemolytic streptococci and pneumococci is greatly reduced at temperatures above 40 C. (104 F.). Moreover, circulation may be stimulated and capillary permeability increased by hyperpyrexia, so that local toxic products may be more rapidly neutralized, diluted or removed, in spite of reduced antibody titer.

Finally, it is definitely known that the phagocytic power of leukocytes is increased by febrile temperatures. Ellingson and Clark, for example, found that the maximal phagocytic activity of guinea pig leukocytes is noted between 39 and 41 C. (102.2 and 105.8 F.), the usual fever range in these animals to infectious processes. Rolly and Meltzer found that with human leukocytes phagocytosis is greatest at fever temperatures (39.5 to 40 C., or 103.1 to 104 F.), an observation confirmed by the Wisconsin bacteriologists, who found that the increased phagocytosis even continues till the temperature reaches 41 C. (105.8 F.).

The fact that artificial fever causes a reduction in the titer of all circulating antibodies must be taken into account in future clinical studies of this method of clinical therapy. Whether there is a parallel reduction in the nonhumoral or fixed tissue defenses has not yet been determined, a determination that might have particular significance in virus disease.

MEDICAL-PHARMACEUTICAL CONFERENCE

THE JOURNAL has drawn attention previously to the Cleveland medical-pharmaceutical conference.¹ A historic and important step was taken to further professional relations between medicine and pharmacy when the conference met on April 6. More than two hundred pharmacists and physicians assembled to hear and discuss papers delivered by Dr. Howard Dittrick, practicing physician of Cleveland, E. F. Kelly, Phar.D., Secretary of the American Pharmaceutical Association, and Robert C. Wilson, dean of the School of Pharmacy, University of Georgia. These papers, which were entitled "Evolution of the Apothecary," "Trends of Pharmaceutical Practice" and "Objectives of the Program of Pharmaceutical Education," were provocative and elicited excellent discussions. Those who participated in the discussion included Dr. Morris Fishbein, Chicago; P. H. Costello, Cooperstown, N. D.; Charles H. Rogers, Minneapolis; Carson P. Frailey, Washington, D. C.; E. Fullerton Cook, Phar.D., Philadelphia; Wortley F. Rudd, Richmond, Va.; A. G. DuMez, Baltimore; Robert L. Swain, New York; Max Lemberger, Milwaukee; Dr. Theodore G. Klumpp, New York, and Dr. Allen H. Bunce, Atlanta, Ga.

7. Dyson, C. B.: *J. Path. & Bact.* 47: 641 (Nov.) 1938.

8. Shaffer, M. F.; Enders, J. F., and Wilson, James: *J. Clin. Invest.* 17: 133 (March) 1938.

1. Medical-Pharmaceutical Conference, Current Comment, *J. A. M. A.* 118: 960 (March 14), 1145 (March 28) 1942.

6. Carpenter, C. M.; Boak, Ruth A.; Mucci, L. A., and Warren, S. L.: *J. Lab. & Clin. Med.* 18: 981 (July) 1933.

The evening session included a dinner, with an address by Dr. Morris Fishbein entitled "Status of Medicine and Pharmacy In the War and After," and a formal discussion which was opened by Col. W. L. Fox of the Army Medical Corps, Fort Knox, Kentucky, and Dr. Walter A. Bastedo and Dr. Cary Eggleston of New York.

This joint meeting of the American Medical Association and the American Pharmaceutical Association is historic in that it is the first of its kind in the history of these two organizations. Agreement was general that the appropriate representatives of each association carry back a report of the meeting to their respective board of trustees, with the request that consideration be given to arranging another similar session. While the current meeting resolved itself into one of good will, a further meeting might serve as a basis for more concrete steps to improve medical-pharmaceutical relations and to orient certain common problems.

Current Comment

HAZARDOUS OCCUPATIONS FOR YOUNG WORKERS

The Fair Labor Standards Act of 1938 established a 16 year minimum age for employment in plants manufacturing goods for shipment in interstate commerce and also provided for the establishment of an 18 year minimum age in any occupation found and by order declared to be particularly hazardous for the employment of minors by the chief of the Children's Bureau of the U. S. Department of Labor. Reports and orders already issued by this bureau have dealt with the manufacture of explosives, driving of motor vehicles or serving as helper, coal mining, logging and sawmilling and the operation of wood working machines. Recently a sixth in this series of reports on occupations hazardous to young workers has been issued on radioactive substances, under the guidance of a distinguished list of medical and technical advisers. The recent review is concerned mainly with exposures and working conditions in plants preparing or applying self-luminous dial paint which is crystalline zinc sulfide activated by radium or in plants manufacturing incandescent mantles which are made from rayon mesh fabric dipped in "lighting fluid," a 25 to 50 per cent solution of 99 parts of thorium and 1 part of cerium nitrates. Surveys have demonstrated that unsafe practices persist, although the tragic custom of lip pointing brushes used in dial painting is no longer observed. Investigation in a plant regarded as representative showed concentrations of radioactive gas up to four times the most liberal recommended maximum permissible limit. Every one with substantial knowledge of these industrial processes, including the employers, concurs in the opinion that minors under 18 years of age should not be engaged in work of this description. They are not so likely to possess the qualities of carefiness, neatness, forethought and attention to personal hygiene essential to the observation of safe

practice. Hearings will no doubt corroborate the findings in this report; an order will then be issued which will have the effect of eliminating exposure of this kind at least as far as minors under 18 years of age are concerned.

KOCH'S CANCER TREATMENT MEETS THE LAW

THE JOURNAL has repeatedly¹ called attention to the promotion of products by the Koch Laboratories. Again and again it has urged federal agencies to display an interest in the matter. The *Detroit Free Press* for Sunday, April 5, notes that "Federal agents took action Saturday against Koch Laboratories, Inc., 8181 E. Jefferson, by arresting Louis Koch, the concern's secretary treasurer, in Detroit and Dr. William F. Koch, president, in Delray Beach, Fla." It notes that the Kochs "will face charges of violating the Federal Food, Drug and Cosmetic Law on 11 specific charges." The *Free Press* reports that Dr. Koch was arrested on a removal warrant and was released on a \$5,000 bond pending a hearing in Detroit on April 15. Assistant United States Attorney John C. Ray is quoted as saying with regard to the concern's synthetic antitoxin "A thimbleful of this liquid sells for \$25 to practitioners and they get as much as \$300 from patients. Chemical analysis shows that the dilution is so infinitesimal that it would be like dumping a cocktail in the Detroit River at the foot of Woodward and expecting to get a kick out of the water going over Niagara Falls." The *Free Press* reports that "Doctors said it was something like a molecule, so tiny that it can't be seen, to every 300,000,000 gallons of water." The United States Attorney, it is reported, said that the Koch brothers were arrested after a prolonged investigation. The *Free Press* called attention to the fact that "Dr. Koch was named defendant in a malpractice suit in Detroit in 1934 and a jury returned a \$25,000 verdict against him while he was head of the Koch Cancer Foundation. Later the verdict was held excessive and in a second trial a jury reduced the amount to \$5,500. The suit was started by Alfred A. Fortner, who told the jury Dr. Koch diagnosed an infected knee as a cancer."² The procedure of diagnosing as cancer a condition which is not malignant, and then expediting an effective treatment, is old in cancer quackery. For a number of years Koch has issued promotional material which contained reports of an unscientific character with regard to cases in which his preparations had been employed. More recently he circularized physicians with regard to what he refers to as "1:4 Benzoquinone," claiming, without the slightest bit of scientific reference, as noted in the most recent reference below,³ that it is the effective ingredient in the sulfonamide preparations. Besides Koch there still remain a few other charlatans in the field of cancer who merit federal attention. Perhaps the Koch incident will seem to them a "handwriting on the wall."

1. J. A. M. A. 76:466 (Feb. 12), 537 (Feb. 19) 1921; 82:2054 (June 21) 1924; 86:1469 (May 8) 1926; 88:928 (March 19) 1927; 89:296 (July 23) 1927; 106:2189 (June 20) 1936; 107:519 (Aug. 15), 1405 (Oct. 24) 1936; 112:1460 (April 15) 1939; 116:2525 (May 31) 1941; 117:216 (July 19) 1941; 118:734 (Feb. 28) 1942.
2. J. A. M. A. 103:116 (July 14) 1934; 106:929 (March 14) 1936.
3. J. A. M. A. 103:116 (July 14) 1934; 106:929 (March 14) 1936.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

GOVERNMENT TO PAY FOR HOSPITALIZATION OF CIVILIANS INJURED BY ENEMY ACTION

Surgeon General Thomas Parran, U. S. Public Health Service, and Dr. George Baehr, Chief Medical Officer, Office of Civilian Defense, have issued a joint memorandum on details of the program of the government's paying for temporary hospitalization for civilians injured as a result of enemy action. The funds have been allocated to the U. S. Public Health Service from the President's Emergency Fund. The federal government will reimburse all hospitals caring for civilian casualties in the event of air raids or other enemy action at the rate of \$3.75 a day. Any hospital in the nation, voluntary or governmental, may be used as a casualty receiving hospital in the Emergency Medical Service established by the Office of Civilian Defense. Certain institutions in "safe areas" may be used as emergency base hospitals for casualties or other patients whom it may be necessary to evacuate from urban hospitals in exposed areas. For this purpose federally owned equipment may be lent to the base hospital, and their staffs will be supplemented by physicians of the area, who will be commissioned in the reserve corps of the U. S. Public Health Service. The management and control of all such hospitals will remain the responsibility of the local or state authorities. In the establishment of emergency base hospitals, hospitals are now being surveyed and will be classified on a basis of size, equipment and standards of operation.

The organization of medical staffs for base hospitals as units affiliated with casualty hospitals will begin immediately. The physicians and dentists commissioned in the Public Health Service Reserve for service in these hospitals will receive the rank, pay and allowance equivalent to those of the medical corps of the army and will be selected from older age groups, from physicians with disabilities that make them ineligible for military service and from women physicians. They will be assigned to service in regions in which they live as far as possible and will be recruited from the stations of civilian hospitals and cleared through the Procurement and Assignment Service.

DECONTAMINATION OF EYES AFTER EXPOSURE TO LEWISITE AND MUSTARD

The Medical Division of the Office of Civilian Defense, Washington, D. C., submits the following information:

Since publication of the Office of Civilian Defense handbooks "First Aid in the Prevention and Treatment of Chemical Casualties" and "Protection Against Gas," further experience has shown that the 2 per cent solution of hydrogen peroxide recommended for the treatment of eyes following lewisite burns may be injurious if used undiluted. The Chemical Warfare Service now recommends a single instillation in the eyes of a 0.5 per cent solution of hydrogen peroxide as soon as possible after contamination with lewisite. This solution may be prepared by diluting one part of a 2 per cent solution with three parts of water, or one part of a 3 per cent solution with five parts of water. The solution usually found in drug stores is the U. S. P. strength of 2.5 to 3.5 per cent hydrogen peroxide. A 0.5 per cent solution of potassium permanganate has also been found effective as an eye instillation following exposure to lewisite.

In planning decontamination stations, the Medical Division, Office of Civilian Defense, recommends that provision be made near the entrance of the second or shower room for the irrigation of the eyes of contaminated persons. The schematic sketch

of a decontamination station in the Office of Civilian Defense publications mentioned shows the irrigation of eyes in the dressing room, whereas this should be carried out in the second or shower room before the bath is given. Delay until the casualty reaches the dressing room will result in more serious injury to eyes which have been contaminated with mustard gas or lewisite.

PROTECTION OF HOSPITALS

A special committee of the American Hospital Association collaborating with the Medical Division of the Office of Civilian Defense has published in bulletin form "Protection of Hospitals," which had been previously published in hospital journals in order to make its contents immediately available. The Bulletin, No. 3, has diagrams showing how sand bag barricades can be used for temporary reinforcement, tells how to protect windows without cutting off ventilation, describes methods of blackout and has a section on protection against fire in which various types of incendiary bombs and methods of fighting them are described. The bulletin discusses also the protection of patients, personnel and building fabrics, air raid shelters, rescue squads, protection of utilities and facilities for the care of casualties.

THE ARMY NURSE CORPS

The Congress of the United States authorized the formation of the Army Nurse Corps on Feb. 2, 1901. However, women nurses figured in military history of the United States as far back as 1776, and when military surgeons in 1847 were first given rank as officers they were allowed to appoint the nurses required in their individual hospitals and to fix the compensation. Legislation in 1861 gave a definite place to women nurses and fixed their compensation at 40 cents a day and rations. During the Civil War there were 3,214 regularly appointed hospital nurses and in addition an unknown number of unpaid volunteers. They were then under the supervision of Miss Dorothy Dix. Between the Civil War and the Spanish-American War, nursing in the army was done entirely by men. When the United States entered the first world war, the Army Nurse Corps comprised 403 nurses, but within eighteen months the corps had increased to 21,480 nurses, most of whom were reserves called to active service through the American Red Cross; 10,400 of these nurses were sent overseas to serve in England, France, Belgium, Italy and Siberia. They served in various kinds of military hospitals, hospital trains and transports, and even with surgical teams in field hospitals. In 1920, in an amendment to the National Defense Act, Congress provided relative rank for members of the Army Nurse Corps and later retirement for length of service and for disability in line of duty.

To be eligible for an appointment in the Army Nurse Corps, the nurse must be between 22 and 30 years of age, unmarried, a citizen, a graduate of an accredited high school and an approved school of nursing, and a registered nurse, at least 60 inches (152 cm.) in height and of standard weight for her age and height. The commanding generals of the corps areas have authority to appoint nurses. The application must be accompanied by an unmounted autographed photograph taken within the preceding two years and a statement from an official of the high school from which she graduated, giving the date and her numerical place in the class. The physical fitness of the applicant is determined by an examination by a board of medical officers at the nearest army post.

The pay of members of the Army Nurse Corps varies from \$840 a year with maintenance at the start to \$1,380 with main-

tenance after seven to nine years of service, and \$1,560 with maintenance thereafter. Nurses are appointed in the relative rank of second lieutenant, and promotion to the higher grades is determined by length of service, special qualifications and examination. The duties of a nurse in a military hospital are the same as those performed by a nurse in a civil hospital of like character, including night duty. The daily period of duty, as far as practicable, does not exceed eight hours.

A nurse may be retired from active service with pay after thirty years of service or, having reached the age of 50 years, after twenty years of service.

LIAISON OFFICER AT MEDICAL FIELD SERVICE SCHOOL

Lieut. Col. Stanton Higgins, Cavalry, United States Army, has become a member of the faculty of the Medical Field Service School, Carlisle Barracks, Pa., as the first Armored Force liaison officer at this school, instruction in this field previously having been given by an infantry liaison officer. It is important that medical officers know where they fit into the present day complicated war machine and equally essential for liaison officers to understand the medical department's role. Lieutenant Colonel Higgins is a graduate of Yale, was first commissioned in 1917 and served in France in the twenty-sixth cavalry and the First Pursuit Group. He is a graduate of the advance course and the troop officers' course of the cavalry school at Fort Riley, Kan., and the armored force school at Fort Knox, Ky., and was professor of military science and tactics in the high schools of Johnson City, Tenn.

ARMY LIBRARIES

The War Department announced on March 22 that when the national emergency was proclaimed the Army had one hundred and forty-seven permanent libraries. Now it has almost six hundred, containing about two million books on a wide variety of subjects. The new libraries have been combined with the service clubs that have been constructed since the war began, although there are libraries in the old posts and service clubs as well as smaller libraries in hospitals, in company day rooms, outpost stations, antiaircraft batteries and on board transports, and library service is being provided even in combat zones.

The librarians report that new fiction and textbooks on mathematics and radio head the list of "best readers." Camp preferences naturally differ; the Sixth Corps Area (Illinois, Michigan and Wisconsin) likes western novels and Shakespeare's plays. Books on the war are not popular, although at Fort Ord, Calif., Mr. Churchill's "Blood, Sweat and Tears" and "Berlin Diary" are much read.

The primary purpose of camp libraries is to provide recreational reading of fiction; however, there is a growing demand for subject books, histories and biographies. The announcement states that the average soldier in the United States Army is more highly educated than in any other army. Many of the five hundred and sixty-nine thousand volumes in army libraries when the emergency was proclaimed, which were worn out or obsolete, have been discarded and replaced by new books.

BUNDLES FOR BRITAIN

Physicians, hospitals and manufacturers contributed the nearly five thousand used and new surgical instruments and apparatus which were recently shipped to England for distribution to hospitals, Bundles for Britain, Inc., 475 Fifth Avenue, New York, announced on February 24. Equipment which was not in good condition for immediate use when received was reconditioned at the warehouse in New York or by dealers or manufacturers before being packed. The largest single lot in this shipment comprised five hundred and sixty operating instruments for general and special surgical operations and more than six hundred dental instruments; also more than a million tablets of various medicaments. The shipment for insurance purposes was valued at \$10,000 and was made through the American Red Cross.

DRIED BLOOD PLASMA

The Surgeon General of the Army has submitted for publication the following circular letter:

CIRCULAR LETTER NO. 28 (SUPPLY NO. 12)

1. Dried blood plasma is being added to the medical department supply catalogue as standard item 16089 serum, normal human plasma, dried. This dried blood plasma is processed by certain selected manufacturers from blood donated to the American Red Cross. Sources of supply are such that, pending further instructions, this item will be furnished to the following installations only:

- (a) All task, base and overseas forces.
- (b) U. S. Army transports.

2. This item will not be furnished stations within the continental limits of the United States.

3. Liquid plasma centers now in the process of establishment will furnish liquid human plasma for stations within the continental United States. When this liquid plasma is generally available, policies concerning its distribution will be issued from this office by circular letter.

By order of the Surgeon General:

JOHN A. ROGERS,
Colonel, Medical Corps,
Executive Officer.

STATE HOSPITAL OFFICER

The Medical Division of the Office of Civilian Defense has recommended the appointment of a state hospital officer as an official of Emergency Medical Service, particularly in the first, second, third, fourth, eighth and ninth defense regions. The principal function of the hospital officer will be to plan for emergency base hospitals for receiving civilian casualties and other hospital evacuees. His duties will be:

1. To survey the hospitals throughout the state (excluding those in the exposed cities) to determine how many beds can be put into immediate use in emergency with existing kitchen, laundry, sanitation and other engineering facilities. (a) by clearing patients to their homes, (b) by restricting admissions, (c) by use of rooms not normally used for patients, (d) by rehousing medical and nursing staff and other hospital personnel outside the hospital, (e) by use of neighboring buildings (schools, hotels) for patients (or staff), (f) by extra bed accommodation in temporary structures erected on available grounds adjacent to the hospital.

2. To assist in designating for each casualty hospital or group of hospitals in each exposed city (a) the line of evacuation to the base, (b) the transport arrangements, (c) the emergency base hospitals provisionally allotted to each casualty unit.

3. To keep constantly informed of the bed state of every hospital in his area by weekly returns.

4. To advise the Office of Civilian Defense, through the regional medical officer, on the need for providing additional accommodations, e. g. by temporary construction or by converting convalescent homes, hotels, school dormitories or other structures into hospitals.

5. To report to the regional medical officer of the Office of Civilian Defense any exceptional conditions requiring action (e. g. beyond state boundaries or required by the needs of the military situation) and to forward to him copies of a monthly summary report on the state's emergency hospital program. When a hospital outside a state boundary is readily accessible for the reception of casualties from an exposed city, this fact should also be noted.

6. To maintain constant touch with the other service departments of the state defense council (e. g. evacuation).

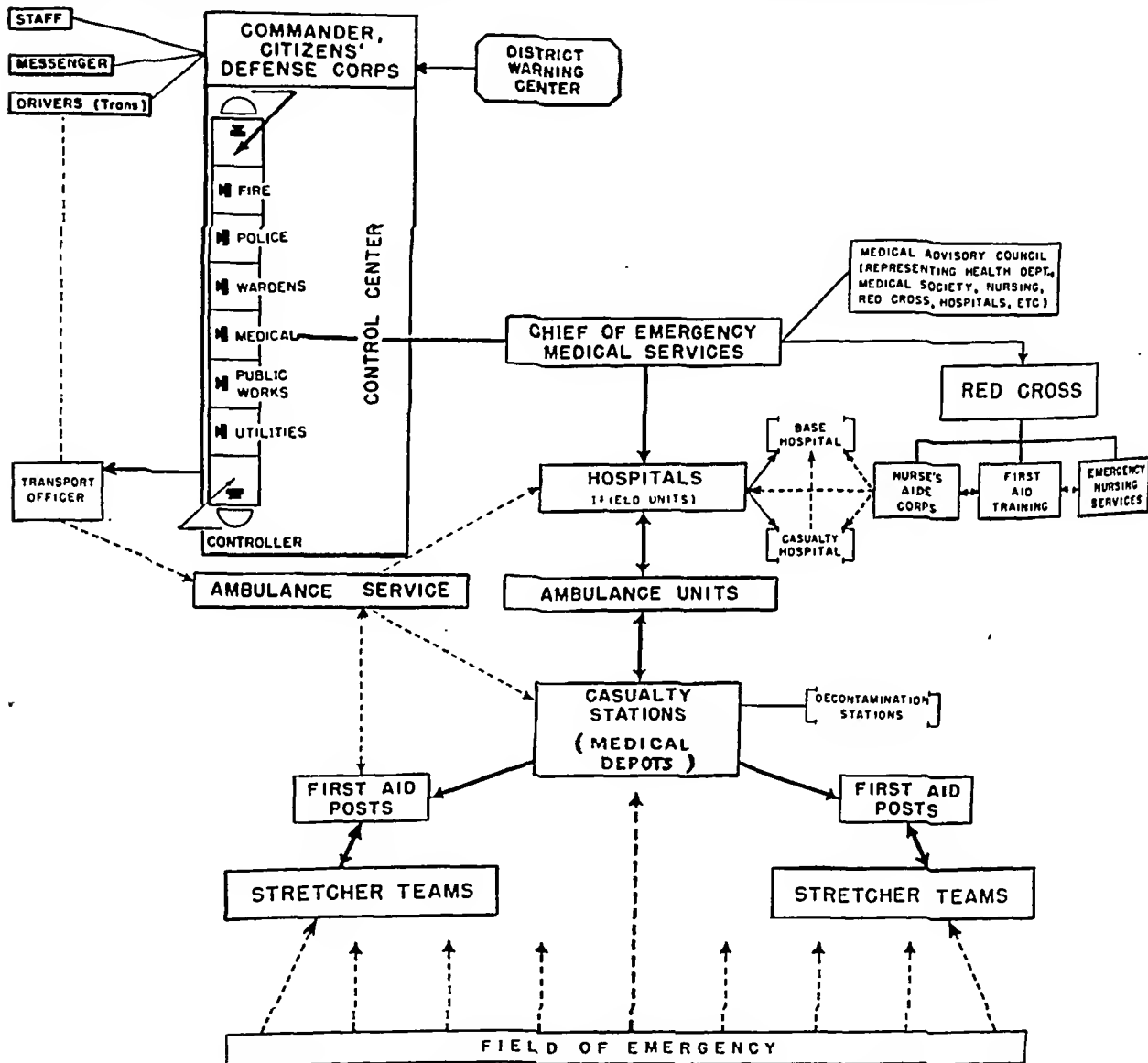
7. To supervise the distribution of medical and hospital supplies under the direction of the state civilian defense property officer and report any threatened deficiency to the regional medical officer.

8. To supervise staff arrangements for emergency base hospitals and for reception areas.

9. To control movements of medical and nursing staff as well as of casualties in any situation affecting emergency base hospitals.

ORGANIZATION OF EMERGENCY MEDICAL SERVICES IN CIVILIAN DEFENSE

Here is the latest design that has been drawn to indicate the organization of medical services for civilian defense. The head of the service is the chief of Emergency Medical Services, who receives his notification directly from the medical representative in the control center. The chief is aided by a medical advisory council, and the Red Cross in time of emergency operates under the chief of Emergency Medical Services as far as concerns the medical aspects of its work and in direct contact with the medical services established in the field of civilian defense.



Organization of local Emergency Medical Services: solid line, line of authority; broken line, line of service.

LECTURES ON WAR EMERGENCIES

The Passaic County (N. J.) Medical Society opened a special course on war emergencies of lectures for physicians and dentists, February 6, with a lecture on "Plan of Emergency Medical Service; Fractures and Traction Splint." The entire group comprised the following topics:

Shock and Hemorrhage, February 13.
Treatment of Burns, February 20.
Blast Lung; Blast Injuries; Methods of Resuscitation, February 27.
War Gases; Germ Warfare, March 6.

The lectures were given at each of the six hospitals in Paterson and Passaic: Paterson General, St. Joseph's and Nathan and Miriam Barnett hospitals, Paterson, and Passaic General, St. Mary's and Beth Israel hospitals in Passaic. The lecturers were chosen from the hospital staffs.

RED CROSS DISASTER RELIEF SQUADRONS

Red Cross chapters throughout the United States are organizing disaster relief squadrons, using either *privately owned* equipment or newly designed mobile units for immediate service in event of a bombing or disaster of any kind. Each squadron is to be equipped with sixteen station wagons, tents, trailers, cots, stretchers and first aid and emergency equipment. New mobile canteens, approved by the WPB, will be available within six weeks. The squadrons are patterned after those of the Boston chapter, first to complete its disaster setup.

SAFETY MEASURES AT WAYNE UNIVERSITY

To insure the safety of students and faculty members at Wayne University, Detroit, in an event of a major emergency the Faculty Advisory Committee on War Related Activities has issued a booklet entitled "The Protection of Wayne University Personnel During the War Emergency." Air raid drills are conducted and at various places first aid stations established and stocked with supplies, cots, blankets and stretchers.

ASSISTANTS TO FLIGHT SURGEONS

A class of enlisted men began a six weeks course of instruction, March 2, at a school of aviation medicine to qualify as flight surgeons' assistants.

ORGANIZATION SECTION

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

New Jersey

Bills Introduced.—S. 217 proposes to require every physician, within one week after making a diagnosis of cancer or other malignant tumor under his care, to report the facts to the state department of health. A similar report must be made by the pathologist in any laboratory to which has been submitted a tissue specimen which after examination discloses the existence of these conditions. A similar report must be made by the person in charge of any hospital, clinic, dispensary, nursing home or other similar public or private institution of every case of cancer, malignant tumor or malignant disease of the blood, and lymphatic systems in a patient receiving care or hospitalization at the institution. A. 238, to supplement the medical practice act, proposes to require every person licensed to practice medicine and surgery, or any branch thereof, to register annually with the secretary of the licensing board on or before July 1 and at that time to pay a registration fee of \$3.

New York

Bills Introduced.—S. 1729 proposes to enact a separate chiropractic practice act and to create an independent board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic. The bill proposes to define chiropractic as "the science of locating and the removing of nerve interference in the human body, where such interference is the result of or caused by misalignment or subluxations of the vertebral column. It excludes operative surgery, the reduction of fractures, the prescription or use of drugs or medicine, and the practice of obstetrics." A. 2093, to amend the provisions of the law relating to physiotherapy, proposes to define physiotherapy as "the use of actinotherapy, hydrotherapy, mechanotherapy, thermotherapy, and electrotherapy, exclusive of the x-ray, *including necessary examinations to determine existing conditions that could be treated thereunder.*" Under the present law the definition of physiotherapy is as just stated, excluding the language in italics.

MEDICAL ECONOMIC ABSTRACTS

COLORADO MEDICAL SERVICE READY

The trustees of the Colorado Medical Service, Inc., through its chairman, Dr. J. W. Amesse, announces in the *Denver Medical Bulletin* for February that the organization of the service has been completed and that it will begin operation in the near future. The preliminary work has been greatly assisted by the Colorado Hospital Association. Nearly three hundred members in the state and county societies of Denver have expressed, over their signatures, a desire to see the medical service plan put into execution. The approval of more than 50 per cent of the active membership indicates that the society as a whole wishes to cooperate in a thorough trial of the plan.

The largest single item in the budget, \$5,214,716.86, is expended for the employment of nurses. Other items with the amounts appropriated are:

For nutrition personnel.....	\$249,663.50
For health education personnel.....	160,434.66
For social work personnel.....	44,852.00
Postgraduate education	384,117.52

MEDICAL SERVICE ASSOCIATION IN PENNSYLVANIA

The annual report of the Medical Service Association of Pennsylvania covering fifteen months of operation appears in the *Pennsylvania Medical Journal* (45:433 [Feb.] 1942). This shows assets and liabilities at \$35,700.78 and a balance on hand of \$7,067.45. Subscribers had increased from 972 on Dec. 31, 1940 to 7,163 one year later. A year ago there were only five small groups and today there are twenty-three groups, some of which are of considerable size.

"This rate of growth is not only healthy," says the report, "but one which may prove to be most advantageous to the association. If the rate were much slower, the volume would be so small that a disproportionate share of income would have to be devoted to the costs of administration. On the other hand, when an organization is traveling uncharted seas as the Medical Service Association is, speed—while it might accomplish certain purposes—certainly increases the possibilities of disaster."

While no attempt has been made to enroll participating physicians except in localities in which there are subscribers, the number of participating physicians has increased through the year from 171 to 226. Physicians have received payments for 466 claims totaling \$13,925. For twelve months out of fifteen a unit value of \$2 has been maintained. A large number of tonsillectomies last summer made it necessary to reduce the unit to \$0.80 for June and \$1 for July and August. A debit balance of \$5,242 is carried on the books of the association in favor of the physicians to whom this reduced value of the unit was paid with the expectation that, as the plan grows, it may be possible to make full payment on these accounts. The percentage of the total income applied to administrative costs has fallen quite rapidly, and in the fifth quarter during which the plan was in operation it amounted to 22.8 per cent of the income.

MEDICAL PRACTICE IN CHILDREN'S BUREAU

The extent to which the Children's Bureau, operating under the Social Security Act in the administration of the State Matching Funds section, is concerned in the practice of medicine is strikingly evident in the budget for the fiscal year ending June 30, 1942. The total budget covers the following items:

Purpose of Proposed Expenditures

	Amount *
Total budgeted	\$10,921,602.21
For professional personnel	8,336,041.32
For nonprofessional personnel (including merit-system employees)	1,028,253.10
For postgraduate education	384,117.52
For hospital care	319,496.66
For other purposes	853,693.61

* Annual budgets and supplemental budgets approved up to Sept. 3, 1941; fifty-one states (the term "state" includes Alaska, Hawaii, District of Columbia and Puerto Rico).

The importance of the medical element in the work of the bureau becomes evident when these items are further broken down. The expenditures for medical personnel, which amount to \$2,027,041.32, are divided into \$1,396,312.02 for full time and \$619,355.89 for part time physicians. A total of \$639,062.28 is assigned to dental personnel, of which \$466,566 goes to full time and \$172,496.28 to part time dentists.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Government Finances Research.—Grants totaling nearly two million dollars have been allocated to the University of California, Berkeley, by the United States government for research to further the war effort. All the work is to be of a confidential nature.

Graduates After Accelerated Courses Eligible for Licensure.—The secretary of the board of medical examiners reports that the attorney general of California has advised him that he may accept for licensure applicants who have graduated from an accelerated medical course. The attorney general pointed out that the medical practice act requires that an applicant must have attended four resident courses of instruction, each consisting of not less than thirty-two weeks with a total of four thousand hours of instruction, but such courses need not be pursued continuously or consecutively. The regulation of the time, if any, elapsing between resident courses of instruction, the attorney general said, is a matter to be handled by each approved school.

Annual Heart Meeting.—The California Heart Association will hold its annual meeting at the Hotel Del Monte, May 3. Dr. Wallace M. Yater, professor of medicine, Georgetown University School of Medicine, Washington, D. C., will be the guest speaker. Other speakers will include:

- Drs. James H. Thompson, Francis L. Chamberlain and William J. Kerr, San Francisco, Auricular Flutter in Childhood.
- Dr. Lewis T. Bullock, Los Angeles, The Importance of Age in the Relative Frequency of Various Congenital Cardiac Lesions.
- Dr. Morris H. Nathanson, Los Angeles, Observations on the Rhythmic Property of the Human Heart.
- Dr. Arthur Seizer, San Francisco, Study of the Circulation in Acute Myocardial Infarction.
- Dr. Walter Beckh, San Francisco, A Revaluation of the Serologic Status in Syphilitic Heart Disease.

A number of papers are devoted to electrocardiographic studies. Dr. John Martin Askey, Los Angeles, will present a report on "Carotid Sinus Sensitivity Accidents."

DELAWARE

Dr. Speer Returns as Secretary to State Society.—Dr. William H. Speer, Wilmington, has again been appointed secretary of the Medical Society of Delaware to fill the vacancy that occurred when Dr. Charles Leith Munson went into army service. Dr. Speer previously served as secretary from 1934 to 1937.

DISTRICT OF COLUMBIA

Director of Venereal Disease Unit.—Dr. William E. Graham, formerly with the U. S. Public Health Service, has been appointed director of the division of venereal diseases of the District health department, effective February 5. He graduated at Rush Medical College, University of Chicago, Chicago, in 1932.

Physician Arrested on Narcotic Charge.—Dr. Laurence M. Hynson, Washington, and Mrs. Janie Mae Jacobs were arrested, January 10, and accused of violations of the Harrison Narcotic Act, according to the *Washington Star*. The physician was accused of writing prescriptions for more than 9,000 grains of narcotics in a year for persons not under his direct professional care. The woman was named as a "contact" who procured "patients." The physician, up to March 9, was still in jail because he was unable to produce the \$2,500 bail, it was said.

Prizes for Research.—The Medical Society of the District of Columbia has announced the winners in its first contest to promote postgraduate medical research, newspapers reported on March 26. First prize went to Dr. Roy G. Klepser, assistant resident in surgery at Gallinger Municipal Hospital, for his work on "Problems in the Local Use of Sulfonamides." Second prize to Dr. Ben D. Chinn, medical officer at St. Elizabeths Hospital, for his paper on "Influence of the Bacterial Flora on the Cultivation of *Endameba Histolytica*." Dr. Irving B. Brick won third prize for his work on "Influenzal Meningitis: Evaluation of Treatment and the Use of Sulfadiazine."

Work for Women.—A meeting was held at the Hotel Mayflower in Washington, March 20-21, under the auspices of the Institute for Women's Professional Relations to discuss opportunities in a wartime world for girls who have enjoyed training in specific types of work, according to the *New York Times*. Among the speakers were Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service; Dr. Sara M. Jordan, Boston, chairman of the Women's Committee on Defense Assignment and Procurement of the American Medical Association, and Helen S. Mitchell, Ph.D., chief nutritionist, Office of Defense Health and Welfare Service.

GEORGIA

Memorial to Physicians.—Crystal chandeliers have been presented to the Fulton County Medical Society as memorials to the late Dr. Edward C. Davis and the late Dr. Stewart R. Roberts. The one in memory of Dr. Davis came from one of the old homes of Philadelphia. The chandelier in memory of Dr. Roberts is a ten light fixture of Waterford crystal made in 1775. It was formerly the property of Duke De Abernethy, removed from Esher Palace, Esher Surrey, England. Friends and colleagues of both physicians donated the memorials. Dr. Davis was president of the county medical society in 1928 and Dr. Roberts in 1915. The Fulton County Medical Society has a committee on memorials which as time goes on is to decide on suitable memorials to honor its members.

University News.—The University of Georgia School of Medicine, Augusta, has received a grant of \$4,350 for continuation of researches in the venereal diseases under the direction of Dr. Robert B. Greenblatt, professor and head of the department of experimental medicine. Another grant of \$2,000 was received for continuation of the work in nutrition by Dr. Virgil P. W. Sydenstricker, professor of medicine, and his staff. Recent lecturers at the school of medicine include Drs. James Dellinger Barney, Boston, on "A Consideration of Some of the Problems of Renal Stones" and Leopold Clarence Cohn, Baltimore, "Carcinoma of the Female Breast." The former Willenford Hospital for Women and Children at the university has been converted into a tuberculosis hospital and was occupied on February 1. Its capacity is sixty beds. Dr. Lucius N. Dodd, professor of tuberculosis, is in charge. Robert H. Shuler, Ph.D., formerly of the University of Chicago, has been appointed assistant professor of physiology at the school of medicine, Augusta.

ILLINOIS

Increase in Diphtheria.—The state department of health has announced a 10 per cent increase in diphtheria over last year and asks the cooperation of local health officers to augment their local programs of control. Up to April 1, 302 cases had been reported in Illinois this year.

Conference on Delinquency Prevention.—Governor Green has called a three day conference on delinquency prevention at the LaSalle Hotel, Chicago, April 20-22. The theme of the conference will be "Onward with Youth to Good Citizenship" and will be participated in by youth leaders from Illinois and surrounding states.

Survey to Determine Hospital Facilities.—A survey of all hospital facilities in Illinois was started on March 26 to determine the number of hospitals, bed capacities, and possibilities for expansion and to list additional buildings which may be used for temporary hospitals, newspapers announce. The work is under the direction of Dr. Herbert L. Pettitt, Morrison, emergency service medical coordinator for the Illinois Council of Defense.

Welfare Group Reorganized.—The Illinois Conference on Social Welfare recently adopted a new constitution and changed its name to the Illinois Welfare Association. As a part of its reorganization, the association has appointed Mr. Bernard A. Roloff, Chicago, executive secretary. Mr. Roloff for two years had been serving as director of public information of the Illinois Children's Home and Aid Society. The new offices of the association are at 225½ South Fourth Street, Springfield.

Chicago

The Hedblom Lecture.—Dr. Stuart W. Harrington, Rochester, Minn., professor of surgery, University of Minnesota Graduate School, Minneapolis, will give the fifth annual Hedblom Memorial Lecture at the University of Illinois College of Medicine, April 29, on "Diagnosis and Surgical Treatment of Intrathoracic Tumors." The lecture is sponsored by local chapter of Phi Beta Pi Fraternity.

Public Meeting on Cancer.—The Northwest and Irving Park branches of the Chicago Medical Society sponsored a public meeting on March 20 for the consideration of cancer. Dr. David E. W. Wenstrand, Milwaukee, medical director, Northwestern Mutual Life Insurance Company, discussed "The Prevalence of Cancer" and Dr. Arthur C. Christie, professor of clinical radiology, Georgetown University School of Medicine, Washington, D. C., "What Is Being Done to Control Cancer." Dr. Benjamin H. Orndoff, clinical professor of radiology, Loyola University School of Medicine, discussed the papers.

Competition for the Capps Prize.—The Institute of Medicine of Chicago announces that competition is now open for its annual Joseph A. Capps Prize for medical research for "the most meritorious investigation in medicine or in the specialties of medicine." The investigation may also be in the fundamental sciences, provided the work has a definite bearing on some medical problem. Competition is open to graduates of approved Chicago medical schools who completed their internship or one year in laboratory work in 1940 or thereafter. Manuscripts must be submitted to the secretary of the Institute of Medicine of Chicago, 86 East Randolph Street, not later than Dec. 31, 1942.

INDIANA

New Head of Dermatology Department.—Dr. Frank M. Gastineau, Indianapolis, has been appointed head of the department of dermatology and syphilology at the Indiana University School of Medicine, Indianapolis, succeeding Dr. Paul Cregor, who retired. Dr. Gastineau was born in Indianapolis and graduated at the medical school in 1918.

Changes in Health Personnel.—Dr. Richard P. Good has been appointed a member of the Kokomo city board of health.

—Dr. Palmer O. Eichler, Decatur, has been named health officer of Adams County.—Dr. Carl B. McCord, Veedersburg, is the new health officer in Fountain County.—Dr. Charles F. Abell, Marion, has been named city health officer.—Dr. William E. Jenkinson, Mount Vernon, has been appointed in charge of the Posey County health unit, and Dr. William Robert Tipton, Greencastle, in charge of the unit in Putnam County.—Dr. Harley F. Flannigan, Lagrange, has been appointed health commissioner for Lagrange County.

KANSAS

Dr. Porter Resigns as Secretary of State Society.—Dr. John M. Porter, Concordia, who was called to active duty in the U. S. Navy on March 6, has resigned as secretary of the Kansas Medical Society. He was elected to the office in May 1939. Dr. Porter was commissioned lieutenant commander in the navy.

Society News.—A joint meeting of the Kansas Obstetrical and Gynecological Society was addressed in Dodge City, March 20, by Dr. William F. Mengert, Iowa City, on "Consideration of Dystocia and of Practical Methods of Estimating Pelvic Capacity."—The Ford County Medical Society and the Kansas Obstetrical and Gynecological Society was addressed in Dodge City, March 20, by Dr. William F. Mengert, Iowa City, on "A Consideration of Dystocia and of Practical Methods of Estimating Pelvic Capacity."—The Wyandotte County Medical Society was addressed, March 3, by Drs. John A. Billingsley on "Aniseikonia" and Harold V. Holter, "Uses and Abuses of Ovarian Hormones." Both are from Kansas City.

MARYLAND

Graduate Week in Medical History.—The Institute of the History of Medicine, Johns Hopkins University School of Medicine, Baltimore, will hold its third "graduate week in medical history," April 27-May 2, on the theme "Contributions of Greece and Rome to Medicine." The course will consist of lectures, seminars, demonstrations, exhibits and discussions. Dr. Henry E. Sigerist, William H. Welch professor of the history of medicine, and director of the institute of medicine, will deliver the opening address. Other speakers will be:

Dr. Owen Temkin, A Hippocratic Surgeon's Practice, April 28, and Anatomical Demonstrations in Antiquity, April 30.
I. E. Drabkin, Ph.D., A Medical Student in Alexandria, April 29.
Dr. Alan F. Guttmacher, Soranus Makes a Delivery, May 1.
Henry T. Rowell, Ph.D., Hygiene in Every-Day Roman Life, May 2.
There will be seminars on:
Bibliography of Greek and Roman Medical Literature, Dr. Sigerist, April 27.
The Cult of Asclepius, April 28, and Greek and Latin in Medical Terminology, May 1, Dr. Ludwig Edelstein.
Drug Lore and Drug Trade in Greece and Rome, April 30, G. Raynor Thompson, Ph.D.

There will also be exhibits on Medicine in Greece and Rome, Greco-Roman Medical Literature, New Literature on Medical History, Publications of the Institute of the History of Medicine and Permanent Museum of the Institute of the History of Medicine.

MASSACHUSETTS

Course in Industrial Hygiene.—Harvard University School of Public Health, Boston, will conduct a course in industrial hygiene, April 27-August 1. The course is open to physicians and engineers who desire training in this field and covers, among other subjects, sanitary parasitology, ecology, industrial ventilation and air conditioning.

Fifteen Years of Cancer Control.—Since a cancer control program was inaugurated fifteen years ago by the commonwealth of Massachusetts, about 14,000 patients with cancer have attended the cancer clinics. A recent report shows that 40 per cent of the patients are still alive. At the end of ten years, 47 per cent of the patients with cancer of the skin were alive, 23.3 per cent with cancer of the mouth, 21.6 per cent with cancer of the uterus and 15.6 per cent with cancer of the breast. The report states that, as ten years after clinic admission the "dying off curve" for clinic patients is almost identical with that of the Massachusetts population, most of these cases may be considered to be cured. In 1940 physicians referred 80.8 per cent of the patients to the clinics as compared with the 20.1 per cent who were referred in the first year of the program. Between 1927 and 1935 there were 421 physicians who used the tumor diagnostic service; in 1940 there were 798. In the same period the number of specimens increased from 2,813 to 3,907. The report also comments on the remarkable change in attitude of the public toward education; in the early days of the program it was difficult to obtain an audience when cancer was under discussion. Today, members of the cooperative cancer control committees number over ten thousand and have little difficulty in arranging for cancer meetings.

In discussing education of the public in the program, the report stated that the delay between the time of the first recognized symptoms of the disease and the time the patient presents himself to a physician is one measure of judging the effectiveness of a program. In the early years of the program the delay averaged 6.5 months. Between 1936 and 1939 it was 5.3 months and in 1940 was 4.6 months. A similar estimate of the effectiveness of education is the percentage of patients with cancer who go to their physicians within the first month of recognized symptoms. In 1940, 21 per cent of the clinic cancer patients went to their physician within the first month of their symptoms as compared with 15 per cent in the early years of the program.

During the period of the cancer program the actual number of deaths has increased annually by about 2 per cent; the clinic attendance of cancer patients has increased annually about 11 per cent, the number of specimens sent to the diagnostic laboratories about 4.5 per cent, and the admissions to general hospitals about 5 per cent. In 1932, 31.1 per cent of the fatal cases had never been treated in a cancer hospital; in 1940 this figure was 15.8 per cent, indicating that hospitalization for cancer is increasing far more rapidly than the cases of the disease. The report states that the attendance of new cancer patients at the state aided clinics has increased five times as fast as the deaths; only about 8 per cent of the cancer population are seen in the clinics. The other 92 per cent make use of other facilities for diagnosis.

MINNESOTA

Pioneer Veterinarian Retires.—Charles E. Cotton, D.V.M., state pioneer of the bovine tuberculosis campaign, has retired after twenty-two years as executive officer and secretary of the Minnesota State Livestock Sanitary Board. The first tuberculin testing of cattle in Minnesota in 1894 is attributed to Dr. Cotton. Through his efforts and those of the Minneapolis Board of Trade, the legislature was induced to pass a law permitting cities to regulate the production and distribution of milk within their limits. In 1903 when the state livestock sanitary board was established, Dr. Cotton was named a member and in 1918 was chosen head of the board.

Course for Physicians on Kenny Method.—The first continuation course for physicians dealing especially with the Kenny technic for infantile paralysis was completed at the University of Minnesota Center for Continuation Study on April 2. Physicians taking the course included Earl C. Elkins, Rochester; William J. Gardiner, Toronto, Canada; Hyman M. Ginsburg, Fresno, Calif.; Frances A. Hellebrandt, Madison, Wis.; Frank H. Krusen, Rochester; William H. Northway,

San Francisco; Malvin J. Nydahl, Minneapolis; Arthur L. Watkins, Boston, and Bertha W. Weinmann, Chicago. The course occupied a week and included studies of the pathology and general care of infantile paralysis as well as special demonstrations in the Kenny method.

NEW JERSEY

State Medical Meeting in Atlantic City.—The one hundred and seventy-sixth annual convention of the Medical Society of New Jersey will be held at Haddon Hall, Atlantic City, April 21-23, under the presidency of Dr. Thomas K. Lewis, Camden. The speakers will include:

- Dr. John S. Lockwood, Philadelphia, Chemotherapy Under War Time Conditions.
- Dr. Ralph C. Williams, U. S. Public Health Service, Washington, D. C., Public Health in Time of War.
- Dr. Joseph A. Bell, passed assistant surgeon, U. S. Public Health Service, Washington, D. C., Epidemiology in War Time.
- Dr. Frederick R. Hook, captain, M. C., U. S. Navy, Bethesda, Md., Chemotherapy in War Time Surgery.
- Dr. George M. Dorrance, Philadelphia, Plastic Surgery in War Time.
- Dr. Frank C. Yeomans, New York, Stricture of the Rectum.
- Drs. Bernard A. Hirschfield, Trenton, and Anthony S. Tornay and Joseph C. Yaskin, Philadelphia, Spontaneous Subarachnoid Hemorrhage.
- Dr. Meredith F. Campbell, New York, Abdominal Symptoms of Urologic Origin in Children.

One luncheon session will be addressed by Dr. Thaddeus L. Montgomery, Philadelphia, on "Management of the Infertile Pregnant Patient." One panel discussion on acute conditions of the abdomen in infancy will be presented by Drs. Edward J. Donovan, New York, Edward W. Sprague, Newark, and Irvin E. Deibert, Camden. The program also includes a series of scientific motion pictures. The fifteenth session of the woman's auxiliary to the state medical society will be held April 21-23.

NEW YORK

State Medical Meeting in New York.—The Medical Society of the State of New York will hold its annual meeting at the Waldorf-Astoria, New York, April 27-30, under the presidency of Dr. Samuel J. Kopetzky, New York. Included among the speakers will be:

- Dr. William P. Wherry, Omaha, Relations of Faulty Dentition to Deafness.
- Major General James C. Magee, Washington, D. C., Transition of Civilian Doctors to Medical Officers of the Army.
- Col. Leonard G. Rowntree, Washington, Lessons Learned from Physical Examinations of Registrants.
- Dr. George Baehr, Washington, The Physician's Role in the Civilian Defense Program.
- Dr. Henry G. Barbour, New Haven, Conn., Movements of Body Water in Relation to Anesthesia.
- Dr. Martin S. Kleckner, Allentown, Pa., Significance and Interpretation of the Diarrheas Encountered in Proctologic Practice.
- Dr. Jacob Arnold Bargen, Rochester, Minn., Chemotherapy in the Digestive System.
- Dr. Louis Schwartz, Bethesda, Md., Protective Methods for the Prevention of Industrial Dermatoses.
- Dr. Sumner L. S. Koch, Chicago, Tendon and Nerve Injuries.
- Dr. Norman F. Miller, Ann Arbor, Surgery of the Ovary.
- Dr. Virgil G. Casten, Boston, Common Motor Anomalies and Their Treatment.
- Dr. Walter I. Lillie, Philadelphia, A Treatment for Herpes Zoster Ophthalmicus.
- Dr. Francis L. Lederer, Chicago, Otorhinal Deficiencies.
- Dr. Allen F. Voshell, Baltimore, Mechanics of the Knee Joint.
- Dr. Philip Levine, Newark, N. J., The Pathogenesis of Erythroblastosis Fetalis.
- Dr. Henry R. O'Brien, Hartford, Conn., Factors in Obstetrical Care: Report of a Rural Study.
- Dr. Herrman L. Blumgart, Boston, Management of Cardiac Patients Who Require Surgery.
- Dr. Howard F. Root, Boston, Medical Aspects of Diabetic Surgery.
- Dr. James C. McClelland, Toronto, Canada, Relationship of Tuberculosis to Trauma.
- Dr. Walter B. Mount, Montclair, N. J., Alexander Anderson, M.D., 1775-1870, The First Wood Engraver in America.
- Drs. Roy B. Henline, New York, and William P. Yunek Jr., Jersey City, N. J., Scrotal Infections: Their Relationship to Trauma and Compensation.
- Drs. Louis M. Orr and Palmer R. Kundert, Orlando, Fla., Late Results Following Transurethral Prostatic Resection.
- Dr. Charles B. Huggins, Chicago, Endocrine Relationships of Prostatic Cancer.
- Dr. William G. Leaman Jr., Philadelphia, Physical Therapy in Heart Disease.
- Dr. Wilson de Rezende, Rio de Janeiro, Experiments with "Glue Suture" in Repair of Nerve Injury: Description of Technique and Results.
- Miss Elizabeth Kenny, formerly of Australia and recently of Minneapolis, The Technique of the Kenny Treatment of Acute Poliomyelitis.

The program will be divided into general sessions, sectional meetings and symposiums, including one on diseases of the chest, in which Dr. Edgar Mayer, assistant professor of clinical medicine, Cornell University Medical College, will deliver the fourth A. Walter Suiter Lecture on "Advances in Tuberculosis of Importance to the General Practitioner."

New York City

Personal.—Dr. Julius Hass, who formerly occupied the chair in orthopedic surgery at the University of Vienna, has been appointed attending orthopedic surgeon, in charge of the Orthopedic Service, at Montefiore Hospital.

Meeting on Anesthesia.—The regular session of the American Society of Anesthetists, Inc., was held at the Squibb Auditorium, April 9. The speakers included Dr. Henry K. U. Beecher, Boston, on "Possibilities and Limitations of Barbiturates in Anesthesia as Suggested by Experimental Work"; Dr. Frederick M. Allen, "Refrigeration Anesthesia for Limb Operation"; Dr. Samuel A. Thompson, "Asphyxial Resuscitation: The Phenomenon and Its Mechanism," and Dr. George L. Birnbaum, "Comparison of Methods of Resuscitation."

Interest in Healthmobile.—The Brooklyn Tuberculosis and Health Association reports that in the first forty-seven days that the healthmobile was open to the public 37,788 persons, chiefly adults, viewed the fifty-one dioramas, an average of 804 daily. During the eleven days it was shown in the Brooklyn Navy Yard 10,563 civilian employees and enlisted men viewed the exhibit. It is planned to show the healthmobile as a part of the scientific exhibit at the annual meeting of the National Tuberculosis Association in Philadelphia May 4-9.

Report of Museum of Health.—Plans are under consideration to establish the American Museum of Health in a wing of the American Museum of Natural History, New York, according to a report of the museum's activities of the past year. More than three hundred thousand people have seen the museum's exhibits since the close of the fair in 1940. Through its exhibit loan program, museum materials were displayed by fourteen organizations in twelve cities in the past year. The report also announces the forthcoming publication of the first report on the Visitor Reaction Study conducted by the museum and the U. S. Public Health Service, under a grant of the Carnegie Corporation, New York, entitled "What the Public Knows About Health" comprising a compilation of the results of the health knowledge tests given at the New York World's Fair and the San Francisco Golden Gate Exposition. Recently elected members of the board of directors include John A. Marcuse, Basil O'Connor, New York, and Edwin A. Salmon. Mr. O'Connor was elected treasurer of the museum. Plans are now going forward to hold a meeting of the American Museum of Health on April 27.

NORTH CAROLINA

Internships and the Accelerated Program.—In order to cooperate with the accelerated medical school program, the Duke Hospital internships of twelve months in the various services will commence on July 1, 1942, April 1, 1943, Jan. 1, 1944, Oct. 1, 1944 and July 1, 1945. This schedule will provide an overlapping in internships for a period of three months, during which the preceding group will be senior interns. Applications should be sent to the superintendent six months before these dates.

PENNSYLVANIA

Meeting of Ophthalmologists.—A joint meeting of the Wilkes-Barre, Southern Anthracite and Reading Eye, Ear, Nose and Throat societies will be held at the Schuylkill Country Club near Pottsville, April 29, with a view to forming the Eastern Pennsylvania Association of Eye, Ear, Nose and Throat societies. The following scientific program has been arranged:

- Dr. Benjamin F. Souders, Reading, Ocular Absorption of Certain Sulfonamides.
- Dr. Thomas R. Gagon, Pittston, Ocular Signs of Myasthenia Gravis and the Prostigmine Test.
- Dr. Horace J. Williams, Philadelphia, Ménière's Disease.
- Dr. Douglas MacFarlan, Philadelphia, Deafness.
- Dr. Algernon B. Reese, New York, Practical Ophthalmological Therapeutics.

Dr. Lewis T. Buckman, Wilkes-Barre, is temporary chairman of the proposed group and Dr. James E. Landis, Reading, temporary secretary.

Philadelphia

De Schweinitz Memorial Library.—Plans are under way to equip a library in the University Hospital in honor of the late Dr. George E. de Schweinitz, professor emeritus of ophthalmology, University of Pennsylvania School of Medicine. Friends of Dr. de Schweinitz have undertaken to finance the project. Any one wishing to contribute may address Mr. Edmund R. Purves, chairman of the committee, at the University Hospital.

Dr. Ruth Weaver Succeeds Dr. Martha Tracy.—Dr. Ruth Hartley Weaver, registrar of vital statistics of Philadelphia, has been appointed assistant director of health to succeed the late Dr. Martha Tracy. Dr. Weaver graduated at Woman's Medical College of Pennsylvania in 1917 and was an instructor in surgery there from 1919 to 1925. She has served as epidemiologist of the city department of health and is at present assistant professor of epidemiology and vital statistics, Temple University School of Medicine.

RHODE ISLAND

Health Institute.—The twelfth New England Health Institute will be held at the Biltmore Hotel, Providence, April 21-23. Dr. Thomas Parran, Washington, D. C., surgeon general, U. S. Public Health Service, will give the principal address, and Mark D. Elliot, D.D.S., Boston, will address a luncheon meeting of the Rhode Island Nutrition Association and the Rhode Island Dental Society on "Nutrition and Dental Health."

WASHINGTON

Medical Round Table of the Air.—Station KIRO, Seattle, and the King County Medical Society are cooperating in a weekly program entitled "Medical Round Table of the Air." The series opened on April 9 and featured a panel of physicians to discuss medical developments of current interests particularly from the standard of their effects on physical fitness. A question of the week will be chosen from among those received from listeners. The names of the physicians are not mentioned on the broadcast nor in any of the general public releases.

PUERTO RICO

Report of School of Tropical Medicine.—A report has been issued concerning the activities of the School of Tropical Medicine, San Juan. Teaching started in the department of public health on Feb. 17, 1941. This department will confine its work to the training personnel for administrative and field duties within the Insular Health Department. A sum of \$65,000 had been apportioned under the National Security Act to maintain an educational program under the direction of this department. The library, which was expanded, was moved into a new building at the close of the calendar year.

Legislative action of May 1, 1940 set aside the University Hospital as a diagnostic and research unit, cooperating with the district hospitals of the Insular Health Department in the study and investigation of tropical diseases. During the year ended June 30, 1941 the hospital admitted 688 patients for medical attention. Forty children were treated in the children's ward, recently opened through the gift of \$2,000 of the Rotary Club of San Juan. A total of 16,998 outpatients were treated. Of the two hundred and fifteen operations performed, one hundred and one were on charity patients; one hundred and forty-one blood transfusions were given. The report treats the many problems of research carried on in the various departments of the schools, bringing the many activities up to date.

Dr. George W. Bachman, director of the School of Tropical Medicine, recommends that the school be given a permanent operating budget; this lack he says explains why no promotions have been extended to the full time faculty members. The school has grown from an organization which could be supported on a yearly budget of \$30,500 in 1926 to one that now requires an annual maintenance appropriation of \$276,747.

GENERAL

Meeting of Psychoanalysis Association.—The meeting of the Association for the Advancement of Psychoanalysis will be held at the Copley-Plaza Hotel, Boston, May 19. The morning session will be devoted to a panel discussion on human destructiveness. The speakers at the afternoon session will include the following New York physicians:

Dr. William V. Silverberg, Psychoanalysis, Religion and World Crisis.
Dr. Bernard S. Robbins, Evolution of the Neurotic Present from the Traumatic Past.

Dr. Karen Horney, The Role of Unconscious Arrogance in Neurosis.
Dr. Judah Marmor, The Role of Instincts in Human Behavior.
Dr. Clara M. Thompson, What Is Penis Envy?

Annals of Surgery to Appear in Spanish.—Beginning with the June issue, *Annals of Surgery* will henceforth appear also in a Spanish edition. This arrangement was a result of negotiations of the Coordinator on Inter-American Affairs. Mr. Lewis Hanke, director of the Hispanic Foundation, Guillermo Kraft Company, one of the oldest publishing firms in Buenos Aires, will translate the *Annals of Surgery* each month for South American physicians and surgeons. The editorial board

of the journal, of which Dr. Walter E. Lee, Philadelphia, is chairman, will cooperate with Latin American physicians in the new project.

Association for the Study of Neoplastic Diseases.—The spring meeting of the American Association for the Study of Neoplastic Diseases will be held in the Bowman Gray School of Medicine, Wake Forest College School of Medical Sciences, Winston-Salem, N. C., April 23-25. The Robert E. Lec Hotel, Winston-Salem, will be the headquarters. The following subjects will be covered: tumors of the soft parts and miscellaneous tumors, intrathoracic tumors, tumors of bone, tumors of the female generative organs, tumors of the breast and tumors of the gastrointestinal tract. The summer meeting of the association will be held at the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, June 25-27, with Dr. Grant E. Ward, Baltimore, in charge.

American Federation for Clinical Research.—The first annual meeting of the American Federation for Clinical Research will be held at the Center for Continuation Study, University of Minnesota, Minneapolis, April 20-21. Among the speakers will be:

Drs. Henry N. Harkins and Conrad R. Lam, Detroit, Quantitative Studies on Plasma Therapy in Severe Burns.

Dr. Edward C. Reifstein Jr., Syracuse, N. Y., The Effect of Gonadal Hormones on Senile Osteoporosis.

Drs. Carl G. Morlock and Byron E. Hall, Rochester, Minn., The Association of Hepatic Cirrhosis, Thrombocytopenia and Hemorrhagic Tendency.

Dr. John A. Anderson, Minneapolis, The Antagonism of Adrenal Cortical Extract to Pitressin in Human Diabetes Insipidus.

Dr. Irving Greenfield, Brooklyn, Thrombosis of the Abdominal Aorta.

Drs. Fuller Albright, Patricia H. Smith and Russell Fraser, Boston, Short Stature Associated with Congenital Hypoplasia of the Ovaries.

Dr. Nahum J. Winer, New York, Renal Function in Diabetes Insipidus.

Dr. Willis E. Brown and Violet M. Wilder, Ph.D., Omaha, Response of the Human Uterus to Adrenalin.

Five Day Cure for Gonorrhea.—For the first time, a five day cure for gonorrhea has been perfected and proved in large scale tests, Surg. Gen. Thomas Parran of the U. S. Public Health Service announces. Sulfathiazole is now credited with the cure of at least 80 per cent of all gonorrheal infections. Of the remaining 20 per cent, many may be cured by another course of treatment with the same drug or by other special methods. The surgeon general's announcement coincides with the appearance of an article describing the five day treatment in *Veneral Disease Information*, published by the service. Entitled "The Management of Gonorrhea in General Practice," the article was prepared by the executive committee of the American Neisserian Medical Society. Originally developed in the venereal disease research laboratory of the public health service, the cure has been confirmed by tests on thousands of patients in medical centers and is being recommended for routine use by the medical profession.

Meeting of Health Officers.—Dr. Carl V. Reynolds, Raleigh, secretary and state health officer of the North Carolina State Board of Health, was elected president of the State, Territorial and Provincial Health Authorities of North America at the recent meeting in Washington, succeeding Dr. Frederick W. Jackson, deputy minister of health, Winnipeg, Man. Other officers are Drs. Gregoire F. Amyot, provincial health officer, Victoria, B. C., vice president, and Albert J. Chesley, Minneapolis, secretary and executive officer, Minnesota Department of Health, who was reelected secretary and treasurer for his eighteenth term. Following a meeting with the U. S. Children's Bureau a new organization was formed composed of state and territorial health officers of the United States and its possessions to act as a clearing house on matters of federal import relating to the various states and territories. The regular association had met earlier with the U. S. Public Health Service to hear, among others, addresses by Dr. Thomas Parran, surgeon general of the service, and Paul V. McNutt, administrator, Federal Security Agency, on "Health Agencies, Their Responsibilities and Their Opportunities During the Present Crisis."

Annual Exhibit of Physician's Art Association.—The fifth annual exhibit of the American Physician's Art Association will be held at Atlantic City, N. J., June 8-12. The gallery will be on the main floor of the auditorium. The secretary of the art association, Dr. Francis H. Redewill, has sent entry blanks to members giving details of the kind of art pieces that will be exhibited and how to send them. Dr. Redewill's address during the annual meeting will be the Hotel Claridge, Atlantic City, where all exhibitors should send their pieces express collect to arrive between June 1 and June 6. Through the courtesy of Mead Johnson & Co., Evansville, Ind., there will be no fees for hanging and no express charges

either way. The type of art to be exhibited includes personal work of the following types of medium: oil portraits, oil still life, landscapes, sculpture, water color, pastels, etchings, photography, wood carving, leather tooling, ceramics and tapestries (needle work). All pieces should be sent preferably by railway express collect, automatically covered with \$50 insurance. The dues of the American Physician's Art Association after March 1, 1942 are \$2. However, those who paid their \$1 dues prior to March 1 will be eligible to exhibit. Mead Johnson & Co. has published a book containing photographs of art work done by six hundred physicians, a copy of which will be mailed gratis to every member of the American Physician's Art Association in a short time. Exhibitors should send now for entry blanks to Dr. Redewill in the Flood Building, San Francisco, one of which should be used for each medium in which it is desired to exhibit. There is a charge of \$1 for each extra medium. Only two pieces of art are allowed in each type of medium. The prizes offered will include more than fifty trophies, twenty-five medals and six plaques.

FOREIGN

Soviet Doctors Use American Methods.—Dr. B. A. Petrov, chief surgeon of the Black Sea Fleet of the Soviet Union, in an intercontinental news dispatch from Moscow is reported to have said that the application of American surgical technics by Russian doctors are bringing highly gratifying results. Soviet field surgery, he said, now applies a cast directly on the open wound. The favorable action is rapid, makes for rest of the wound and the fracture, facilitates the removal of the patient, and effects tremendous saving in dressing materials. Dr. Petrov stated that 70 per cent of the wounds in naval battles are wounds of the extremities. He referred particularly to the plaster cast technic developed by Dr. H. Winnett Orr of Lincoln, Neb. Dr. Orr's book "Trueta's Treatment of War Wounds and Fractures" is one of a list that Russian doctors have requested.

Dr. Petrov pointed out that burns of the extremities and of the face and body were more frequent in the navy than in the army and "as a basic means of the treatment of such wounds we have adopted the method of the American physician Batman, which has produced excellent results."

Russian War Relief, Inc., 535 Fifth Avenue, New York City, endeavors to supply Soviet medical authorities with information about the latest American medical advances.

Public Health Under Hitler's Rule.—The following items have been collected from various sources:

Smallpox has been reported in the Paris area, and the Academy of Medicine has urged the people to have themselves revaccinated, according to Radio Lyons.

The official report of the Budapest health officer states that during January there were 4 cases of typhus in Budapest, according to the *Deutsche Zeitung*, Budapest. The burgomaster of Aalborg insists there are no lice in his community and refuses to take precautions against typhus, declaring that the medical officer's methods of investigations are illegal, according to the Göteborgs *Handels-och Sjöfartstidning*. The meeting of the district medical officers at Copenhagen decided that the need for delousing centers is not pressing, but the Ministry of Health is prepared to act at short notice.

According to the *Paris Soir*, the comité nationale de l'enfance has submitted a report to the Academy of Medicine of Paris, stating that emaciation and an increase in tuberculosis are prevalent among the population in the occupied zone as a result of food restrictions.

Twelve persons were seriously "poisoned" by meat in Miskole, according to the *Deutsche Zeitung*, Budapest. The illness was traced to sausage sold by a butcher named Augustini. The authorities made an investigation to determine whether the meat came from a diseased animal clandestinely slaughtered. The chief physician of the Elisabeth Hospital established that the cause of the illness was "paratyphoid infection." This announcement caused great anxiety in Miskole, as a number of families had bought meat from this butcher.

The Croat minister of public health, according to the *Neues Wiener Tagblatt*, in an address at the annual meeting of Croat physicians, pointed out that the Croat state is confronted with an impossible public health situation, as in the whole of Croatia there are only fifteen hundred physicians, less than in the old Croatia before the war of 1914-1918.

All persons of Jewish descent in Bulgaria who belong to the medical, dental and pharmaceutical professions and who no longer can follow their profession in urban areas will, according to *Transocean*, now be settled in rural districts, under the law of civilian mobilization, where there is a shortage of doctors and pharmacists.

In an article in the *Deutsche Allgemeine Zeitung* the death rate among infants is said to be favorable in Germany, although measures must be taken to reach still better figures. A center for collecting mother's milk is to be created in Gau Essen.

Paris had 2,270,253 inhabitants on January 8, according to Havas, as compared with 1,051,506 in 1940 and 2,824,746 in 1936. The total number of people in the department of the Seine is 4,136,614.

The reich youth leader, Axmann, addressed the Hitler youth leaders in Berlin and said, according to DNB, that during 1942 the Hitler youth would pay particular attention to securing candidates for the army medical corps and will increase its efforts in caring for the welfare of the soldiers and for the next of kin of those killed. Axmann is reported to have said that all the Hitler youth leaders fit for service were now with the forces and the practical work in this organization was now being done by the younger and subordinate elements of the corps. All the other activities of the Hitler youth would be of the kind dictated by the necessities of the war. Axmann stated that service in the East is now the most important task.

Government Services

General Dunham to Go to Ecuador

Brigadier General George C. Dunham, Medical Corps, U. S. Army, has been appointed director of a new division of health and sanitation in the Office of Inter-American Affairs. General Dunham will be placed at the head of a mission which is going to Ecuador to undertake malaria control, improvement of sewage disposal and other sanitary measures in cooperation with the Ecuadorean government. According to *Science*, members of the mission will include Dr. Walter C. Earle of the International Health Division of the Rockefeller Foundation and recently health officer of the Champaign-Urbana (Ill.) health district. General Dunham was chief of the division of preventive medicine, Office of the Surgeon General, War Department, from 1922 to 1925; director, military sanitation, medical field service school, Carlisle Barracks, Pennsylvania, 1926-1931; technical adviser of public health to the governor general of the Philippine Islands, 1931-1935, and director of laboratories of the Army Medical School since 1936.

Health of the Army

A new low death rate per thousand strength for the U. S. Army was established in 1940. According to the annual report of the surgeon general, there were 257,136 admissions to sick report from all causes, giving an annual rate per thousand of 763.3, an increase of 44 per cent over that for 1939, which was the lowest on record. Diseases of the respiratory system were responsible for the largest number of admissions. In second place were infectious diseases and conditions of the digestive system. There were 267 admissions with one hundred and eight deaths due to aircraft accidents in 1940, and thirty-two deaths from accidental drowning. The admission rate for venereal diseases for the whole army was 42.5 per thousand strength. The number of days lost from duty due to venereal disease was 456,148. The average number of men absent from duty each day from this cause was 1,246. The average length of treatment in hospitals or quarters for all venereal diseases was thirty-two days. The average number of days lost per case for syphilis was twenty-eight, for gonorrhea thirty-five and for other venereal diseases twenty. Gonorrhea continued to lead the causes of noneffectiveness. During the year, 1.39 per cent of the strength of the army was lost by discharge or retirement for physical disability. Dementia praecox was the leading cause for first charge. Manic depressive psychoses also appeared for the first time among the leading causes. Tuberculosis as a leading cause of death reached a new low and is near the bottom of the list. There were 229 deaths attributed to motor vehicle accidents.

During the fiscal year 1941 the average number of men present daily in the Civilian Conservation Corps was 243,926, a reduction of 22,252 from the preceding year. Of the 337,343 admitted to sick report during the year, 316,758 were for disease and 20,612 for injuries. This was the smallest total for injuries in any one year since the inception of the corps in 1933. There were 521 deaths, of which 248 were attributed to injuries and 273 to disease.

On Jan. 2, 1941 the Office of the Surgeon General, except the Army Medical Museum and the Army Medical Library, was moved from War Department Annex Number 1 into a portion of the Social Security Building.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 28, 1942.

Health Conditions in Germany

Information as to health conditions in Germany is difficult to obtain. The press is rigidly controlled, and truth is not only suppressed but replaced by any fiction which is thought to be helpful. However, leakage will occur. Few German medical journals come to this country now, but the *Times* is able to quote from information showing that undernourishment and fatigue are beginning to tell on the population. In a copy of the *Münchener medizinische Wochenschrift* the date of which is not given, Dr. G. Seiffert sets out to prove that precautions suggested by previous wars kept epidemics under control until the outbreak of the conflict on the eastern front, but his figures suggest the opposite. Cases of diphtheria during the first five weeks of 1931 numbered 25,144; in 1939, 65,144; in 1941, 65,775. For scarlet fever the figures were in 1931, 19,494; in 1940, 56,154; in 1941, 167,428. For dysentery, 1931, 2,596; 1939, 6,135; 1940, 12,705. Similar increases are shown for whooping cough, tuberculosis and food poisoning. The average number of cases of disease given in 1931 is increased threefold in 1939 and sixfold in 1941.

The *Deutsche medizinische Wochenschrift* devotes the major part of two December issues to the effects of prolonged fatigue on health. It states that only relaxation can remove the effects, often far reaching, of sustained fatigue. All attempts to do so by stimulant drugs, such as amphetamine sulfate, have utterly failed. Increasing observations that the use of such drugs has not only produced total collapse but inculcated drug habits is strengthening the resolve of physicians not to use them for combating fatigue.

Report on the Public Health

The reports on the public health continue good in spite of war conditions. Sir William Jameson, chief medical officer of the Ministry of Health, states that there is no indication of an influenza epidemic, although it is too early to say that we shall completely escape. In the one hundred and twenty-six large cities of England and Wales the deaths recorded from influenza in the week ended January 3 numbered only three, compared with fifty-three last year. The measles epidemic, which raged last year, has almost disappeared. The cases notified during that week numbered 926, compared with 17,853 last year. Decreases are also recorded in notifications of scarlet fever, diphtheria, pneumonia, cerebrospinal fever and whooping cough. Jameson advises all mothers of infants to take advantage of the black currant preparations made available through maternity and child welfare centers and food offices. There is black currant juice for infants up to 6 months and black currant purée for those from 6 months to 2 years of age.

Reduction of Rationed Foods

In a broadcast the minister of food, Lord Woolton, said that our food position was so strong that he had been able to grant a winter bonus of rationed foods. But a new factor had arisen: the war with Japan. Much of our food had been coming across the Pacific Ocean. Ships that brought us food must now carry men and munitions to new places far over the seas, and we should have to manage with smaller imports for a time. We could for a time live on our present rations, but it would not be wise. It would be much more comfortable to cut our rations a bit and know that there was safety behind them. The weekly rations of the following goods are now reduced to the level

before an increase recently granted: sugar 8 ounces, butter and margarine 6 ounces, of which not more than 2 ounces may be butter; cooking fat 2 ounces. The cheese weekly ration will be reduced from 3 to 2 ounces. For the present a bigger ration will be allowed to certain classes of workers, and the ration for vegetarians and the diabetic will not be reduced.

The Increased Use of Canned Foods

One of the most important dietetic changes brought about by the war is an increased use of canned foods. The Ministries of Food and Health have therefore made a joint announcement on these foods. They state that canned food compares favorably with cooked food. Articles for canning are selected with care and are canned almost at once before they have lost any of their nutritive value. Processing or sterilization is done with scientific care and less loss of nutritive value than in cooking on an open range. Chemically there is little risk of contamination with tin. Articles, such as acid fruits, which might attack tin are packed in lacquered cans, which give a high degree of protection. Little or no solder is now used to seal food cans. Bacteriologically, canned is less likely to be infected than fresh food. It is handled less, as most of the preparation is done by machinery, and it is sterilized after packing in the tin.

The life of canned foods varies with the article, the presence or absence of protective internal lacquer, and the temperature and humidity of the place of storage. The last acts only by producing rusting and eventually perforation of the tin. One year is given as the usual period for the storage of canned soft stoned fruits in a cool place. After that the food value is not impaired but the pack may appear less attractive and the natural acidity of the fruit may attack any scratched or damaged parts of the lacquer. Honey or jam should keep at least three years in lacquered cans. Vegetables store well for at least two years. They then become less attractive, but their food value remains unchanged. Fish, especially sardines and salmon, keep for over five years. So do meat packs (sausages, meat rolls, galantine, tongues, soups). Canned hams present a special problem; the packer usually guarantees them for only six months. But if after longer storage the can is not bulged, the contents are usually sound. Condensed milk keeps for varying periods according to the sugar content. Unsweetened condensed milk keeps for three years, sweetened full cream for six to nine months, after which the sugar may crystallize, but this is in no way objectionable. Dry milk powder should be used within a few weeks.

Increase of Professional Fees

An inevitable result of war is increased prices, resulting in the first instance in scarcity of certain commodities resulting from diversion of industry into war channels. An effect of the increased cost of living is a demand by organized workers for an increased wage to meet this. The increased wage leads to a further increase in the cost of living. This process is known as inflation, and the government, which now controls the whole economy of the country, says that it is anxious to avoid this. Nevertheless it has been responsible for a good many increases in wages. If the process does not go too far we can stand it, as we can other evils. The General Practice Committee of the British Medical Association has recommended that the fees in private practice be increased by 20 per cent. Certain insurance companies have already increased from \$5 to \$6 the fee for life insurance examinations. The committee has decided to make representations to companies which have not yet taken this course. It has also decided to advise branches and divisions to secure readjustment of the salaries of district medical officers in view of the additional work in many areas and increased practice expenses. A wartime increase in the fees of public

vaccinators is also advised and an application for the same increase in the fees of police surgeons. For medical officers of fire departments a fee of \$2.50 is advised for medical examination of entrants and for rendering first aid to persons injured at fires, if the attendance did not exceed half an hour.

Use of Glass and Resins in Rebuilding Houses

In consequence of destruction by air raids there will be a good deal of rebuilding after the war, and improved forms of construction are already being discussed. In a lecture on "The Postwar Home: Its Interior and Equipment," Dr. E. Frankland Armstrong said that glass would soon be more widely used as a building material. There were toughened varieties at which stones could be thrown with impunity, and window glass which cut out the heat rays but admitted the health giving ultraviolet rays of the sun. Transparent synthetic resins would also supplant glass.

MEXICO CITY

(From Our Regular Correspondent)

Feb. 20, 1942.

Tuberculosis in Mexico

The prevalence of tuberculosis in Mexico can be roughly estimated only through the available figures regarding its mortality. The tuberculosis death rate, including all forms of the disease, was 78.83 per hundred thousand in 1922, 68.71 in 1930 and 55.38 in 1938. Notification of cases to public health authorities is quite deficient, but it is believed that an average of 120,000 to 150,000 cases of all forms of tuberculosis exist, and that about 10 per cent of them are in the Federal District. Tuberculosis is more prevalent in the crowded districts of the cities than in the rural areas, although in places located on the coast and in the tropical zones, owing to the presence of malaria, hookworm disease, undernourishment and other ailments, the disease is widespread. In the mining districts in Pachuca City, Hidalgo, Guanajuato City, Guanajuato, and others, the presence of silicosis increases the infection. In the cities and ports of Tampico and Veracruz on the Gulf Coast and Mazatlán on the Pacific, the mortality rate is as high as 500 per hundred thousand. Along the northern border, especially in Nuevo Laredo and Matamoros, Tamaulipas, and Nogales, Sonora, the number of cases is high because of the large number of cases deported. The statistics of the sanatorium of Huipulco show that 68 per cent of patients arrive with bilateral lesions and that 50 per cent of the patients show cavities when entering. In addition to overfeeding the surgical treatment is the most used. The ambulatory treatment of patients with mild types of tuberculosis is extensively used in Mexico with a long rest in their homes supervised by specialized nurses.

During the last ten years several measures to fight against tuberculosis have been taken by the Division of Tuberculosis in the Federal Department of Health, the Department of Public Assistance and the National Tuberculosis Committee. The number of beds for tuberculous patients in official institutions in Mexico amount to less than one thousand beds plus over one hundred in private hospitals. In the last six years the number of tuberculosis clinics has increased. There are eight in the Federal District and twenty-five scattered in the most stricken areas over the nation. A preventorium for children, supported by the Department of Public Education, with fifty beds is located in one of the suburbs of Mexico City. The Departments of Labor and Agriculture are doing their share in improving working conditions and encouraging proper feeding among people living in rural areas. During 1941 the National Tuberculosis Committee started a drive to raise funds which was followed by unexpected success, because in a short time the committee was able to collect about \$750,000 and the bureau of finances of the committee is studying the possibility of raising funds regularly, through the sale of a stamp and by a sort

of social security against the disease. Dr. Víctor Fernández Manero, federal director of health, appointed Dr. Neftalí Rodríguez as chief of the division of tuberculosis, who was elected also president of the national tuberculosis committee. Licenciado Aarón Sáenz was elected treasurer general and Dr. Alejandro Berges executive secretary of the committee. The program for the present year includes the building of a sanatorium for children, hospitals for advanced cases, a preventorium and a rehabilitation farm in the Federal District, and two more sanatoriums on the Gulf and Pacific coasts, at a cost of about \$1,000,000, with which there will be about two thousand more beds available.

Department of Health Manufactures Biologic Preparations

Chemists and bacteriologists working in the Institute of Hygiene of the Federal Department of Health have been increasing the manufacture of biologic preparations, chemicals and medicines to prevent the shortage of such products. Biologic preparations manufactured by the Institute of Hygiene are identical to the foreign ones used before the present situation developed, and the cost is much lower. Officials think that production can be increased for exportation. The Federal Department of Health through the Department of Economics has bought another ton of quinine to be distributed in the malaria zones. In a laboratory recently opened in Guatimoc, Chiapas, in which the cinchona plantation is located, the manufacture of quinine products as an experiment has started. President Camacho has issued an order that all cinchona trees and plantations must be in charge of the Federal Department of Health.

Hospital Program in Mexico

According to a broadcast made by Dr. Gustavo Baz, minister of public assistance, last Sunday the federal government during the present year will encourage the building of hospitals in all large cities, the improvement of hospital and laboratory equipment all over the country and the building of a big medical center in Mexico City with all modern facilities for patients coming to the capital for treatment. Dr. Baz announced also that during the year work will be started on the Children's Hospital, the Mundet Maternity Hospital, the Infectious Disease Hospital, the Dental Institute and the Civil Hospitals of Monterrey, Tampico, Mazatlan and Juquilpan, besides clinics in Veracruz, Puebla, Tuxtla Gutierrez, San Luis Potosi and Sonora.

Marriages

SIMON EUGENE DRISKELL to Miss Tallulah Scruggs Turner, both of Jacksonville, Fla., in St. Augustine, February 20

LEIGH FESTUS WATSON, Los Angeles, to Miss Pepita La Mone of Hollywood, Calif., in New York, January 6.

CREIGHTON WRENN, Mooresville, N. C., to Miss Charlotte Hutson Martin of Charlotte, February 17.

WILLIAM EDWIN DICKERSON, Danville, Va., to Mrs. Cecil May Graeter of Richmond, January 3.

SOLOMON TANENBAUM, Augusta, Ga., to Miss Esther Ann Cordish of Baltimore, January 18.

CHARLES D. SCHILLING, Charlottesville, Va., to Miss Alice Thompson of Gretna, January 10.

EPHRAIM E. CAMP, Russellville, Ky., to Miss Ruth Bonham of Dresden, Ohio, January 25.

GEORGE HOLLANDER to Dr. BEATRICE ELSIE STERLING, both of Philadelphia, January 25.

BYRON Z. BINNS, Monticello, Ark., to Miss Pauline Berry at Benton, January 17.

IVAN ISAACS, New York, to Miss Lola Hortense Schain of Brooklyn, February 11.

ROBERT H. ROBBINS, Waukegan, Ill., to Miss Rachel Eglert of Urbana recently.

Deaths

Frank Leech * Washington, D. C.; Columbian University Medical Department, Washington, 1891; formerly clinical professor of medicine at his alma mater, now known as the George Washington University School of Medicine; served during World War I; lieutenant colonel, Medical Reserve, U. S. Army; past president of the Medical Society of the District of Columbia and of the Clinico-Pathological Society of Washington, D. C.; emeritus fellow of the American Academy of Pediatrics; served in various capacities on the staff of the Childrer's Hospital from 1892 until his retirement in 1938, when he was honored by a tablet citing his distinguished services to the institution, and his friends established the Frank Leech Laboratory Fund; formerly on the consulting staff of the Garfield Memorial Hospital; fellow of the American College of Physicians; aged 72; died, February 7, in the Walter Reed General Hospital of cerebral thrombosis.

John Joseph Killeen, Chicago; Jenner Medical College, Chicago, 1904; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the Illinois State Medical Society; formerly assistant clinical professor of ear, nose and throat diseases at the Loyola University School of Medicine; assistant in ear, nose and throat diseases, Rush Medical College, Chicago, from 1907 to 1909; instructor in ear, nose and throat diseases, Chicago Polyclinic from 1909 to 1911; surgeon for the Baltimore and Ohio Railroad from 1909 to 1914; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served during World War I; consulting ear, nose and throat surgeon, U. S. Marine Hospital; otolaryngologist and attending surgeon, St. Anthony de Padua Hospital and St. Mary of Nazareth Hospital, where he died, March 17, aged 64.

Maynard Ladd, Newton Square, Pa.; Harvard Medical School, Boston, 1898; member of the Massachusetts Medical Society; past president of the American Pediatric Society and the New England Pediatric Society; assistant in physical chemistry from 1900 to 1902, assistant in diseases of children from 1900 to 1903, assistant in pediatrics from 1903 to 1906, instructor in pediatrics from 1906 to 1922 and associate in pediatrics from 1922 to 1938 at his alma mater; was deputy commissioner of the children's bureau of the American Red Cross in France and directed hospitals there during World War I; in 1934 was made an *Officier d'Académie*, France; consulting physician to the Children's Hospital; medical director of the preventive clinic, Boston Dispensary; aged 69; died, March 9, in Media of cardiorenal disease.

Daisy Maude Orleman Robinson * Washington, D. C.; Columbian University Medical Department, Washington, 1890; member of the Medical Society of the State of New York; joined the medical corps of the French army during World War I and later was transferred to the United States Army, with a commission as major; received decorations from both governments; formerly associated with the U. S. Public Health Service; at one time member of the state board of health of New York; aged 72; died, March 13, in St. Luke's Hospital, Jacksonville, Fla.

John Frederick Kuhn * Oklahoma City; Georgetown University School of Medicine, Washington, D. C., 1901; professor emeritus of gynecology at the University of Oklahoma School of Medicine; member of the Central Association of Obstetricians and gynecologists; fellow of the American College of Surgeons; member of the surgical staff of the State University and Crippled Children's Hospital; consulting surgeon, St. Anthony's Hospital; aged 69; died, February 14, in Decatur, Ga., of coronary thrombosis.

Bryan Charles Magennis, Paterson, N. J.; University of the City of New York Medical Department, New York, 1883; formerly a dentist; member of the Medical Society of New Jersey; past president of the Passaic County Medical Society; fellow of the American College of Surgeons; veteran of the Spanish-American War; at one time health officer and member of the city board of health; consulting surgeon, Paterson General and the Nathan and Miriam Barnert Memorial hospitals; aged 83; died, February 17.

Charles Barnett Reynolds, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; fellow of the American College of Surgeons; served during World War I; formerly associate professor of obstetrics at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; on the courtesy staff of the Graduate Hospital; visiting gynecologist of the Germantown, Jewish, Presbyterian and Hahne-

mann hospitals; aged 69; died, March 1, of carcinoma of the rectum.

Henry Wilbur Irwin, Indianapolis; University of California Medical School, San Francisco, 1910; member of the Indiana State Medical Association; served during World War I; formerly a medical missionary in China and instructor at the West China Union University School of Medicine at Chengtu, Szechwan, China; aged 60; on the staffs of St. Francis Hospital, Methodist Hospital, Indiana University Hospital and St. Vincent's Hospital, where he died, February 8, of bronchopneumonia.

Jacob Joshua Levy, Syracuse, N. Y.; Syracuse University College of Medicine, 1903; member of the Medical Society of the State of New York, American Roentgen Ray Society and the Radiological Society of North America, Inc.; associate professor of clinical medicine in physical therapy at his alma mater; on the staff of the University Hospital of the Good Shepherd; aged 62; died, February 22, in Rochester, Minn., of acute myelogenous leukemia.

Hermann Fischer * New York; Columbia University College of Physicians and Surgeons, New York, 1896; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; member of the American Association for Thoracic Surgery; formerly clinical professor of surgery at the New York University College of Medicine; on the staff of the Lenox Hill Hospital; aged 70; died, March 5, of coronary thrombosis.

Fuad Isa Shatara * Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1916; fellow of the American College of Surgeons; instructor in the department of anatomy at the Long Island College Hospital from 1924 to 1929; visiting surgeon and chief, traumatic service, Cumberland Hospital; member, surgical courtesy staff, Harbor Hospital; surgeon, Prospect Heights Hospital; aged 48; died, January 8.

Dorsey Mahon McPherson * Washington, D. C.; Howard University College of Medicine, Washington, 1877; Columbian University Medical Department, Washington, 1884; joined the medical corps of the Army and served two years in the field with the Indian Scouts and the Sixth Cavalry; served as medical examiner of pensions and later as medical expert in the office of the Secretary of the Interior; aged 84; died, March 2.

Harold Carl Goodwin, Springfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1900; member of the Massachusetts Medical Society; division examiner of prisoners for the commonwealth of Massachusetts; at one time superintendent of the Albany (N. Y.) Hospital; on the staffs of the Mary Lane Hospital, Ware, and of the Mercy and Wesson Memorial hospitals; aged 63; died, March 1, of coronary thrombosis.

Charles Wilson Doughtie * Norfolk, Va.; Medical College of Virginia, Richmond, 1898; fellow of the American College of Surgeons; past president of the Norfolk County Medical Society; served on the staff of the Norfolk General Hospital in various capacities; for many years surgeon to the Norfolk and Western Railway; member of a draft board during World War I; aged 65; died, March 5, of pulmonary embolism.

Lionel David Prince * San Francisco; University of California Medical Department, San Francisco, 1912; member of the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; past president of the Western Orthopedic Association; served during World War I; chief orthopedic surgeon, Mount Zion Hospital; aged 55; died, March 6, in the University of California Hospital.

Archibald Addison Alexander, Oakland, Calif.; University of California Medical Department, San Francisco, 1907; member of the California Medical Association; fellow of the American College of Physicians; chief in cardiology, Samuel Merritt Hospital; associate in medicine, Alameda County Hospital; consultant in cardiology, Children's Hospital of the East Bay; aged 61; died, January 17.

James Brodie Ross, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1924; assistant professor of medicine at his alma mater; member of the American Clinical and Climatological Association; secretary of the medical board of the Montreal General Hospital; formerly medical superintendent of the Children's Memorial Hospital; aged 41; died, March 7.

Dennis David Daly, Ellenburg Depot, N. Y.; Syracuse University College of Medicine, 1901; member of the Medical Society of the State of New York; had been health officer for many years of several Clinton County communities at intervals

since 1904; formerly member of the board of education; aged 66; died, February 5, of ventricular fibrillation, coronary occlusion and sclerosis.

Carolyn N. Macdonald @ Chicago; Rush Medical College, Chicago, 1925; formerly clinical assistant in urology at the Northwestern University Medical School; past president and vice president of the Chicago Council of Medical Women; on the staff of the Women and Children's Hospital; aged 54; died, February 20, in St. Luke's Hospital of chronic nephritis and uremia.

Dana W. Kingsbury @ Nanticoke, Pa.; College of Physicians and Surgeons, Baltimore, 1882; an Affiliate Fellow of the American Medical Association; was a member of the draft board during World War I; member of the board of education; for many years surgeon for the Pennsylvania Railroad Company; aged 89; died, February 8, of arteriosclerotic heart disease.

William De Lue Anderson, Portland, Maine; Medical School of Maine, Portland, 1915; also a pharmacist; fellow of the American College of Surgeons; member of the Maine Medical Association; formerly county medical examiner; associate surgeon, Maine General Hospital; surgeon, Maine Eye and Ear Infirmary; aged 61; died, March 1, of coronary thrombosis.

Adolph Von Prief Fardelmann @ Brooklyn; Long Island College Hospital, Brooklyn, 1916; fellow of the American College of Surgeons; president of the Brooklyn Surgical Society; surgeon during World War I; aged 48; courtesy surgeon, St. John's Hospital; on the staffs of the Lutheran Hospital and the Bushwick Hospital, where he died, February 17.

Rowland William Hall @ Jackson, Miss.; University of Nashville (Tenn.) Medical Department, 1901; past president of the Central Medical Society; member of the American Academy of Dermatology and Syphilology; at one time registrar of vital statistics, state board of health; aged 66; died, February 14, at his home in Clinton.

Dora Van Buren Burkett, Columbus, Ohio; Ohio Medical University, Columbus, 1902; member of the Ohio State Medical Association; veteran of the Spanish-American War and World War I; formerly a lieutenant colonel and chief surgeon of the Ohio National Guard; aged 69; died, March 2, of coronary sclerosis and arteriosclerosis.

David Henry Lawrence, Big Spring, Texas; University of Texas School of Medicine, Galveston, 1902; member of the State Medical Association of Texas; served during World War I; formerly associated with the U. S. Veterans Bureau; on the staff of the Big Spring State Hospital; aged 66; died, February 5, of coronary disease.

David Stewart Fettes, Brooklyn; Long Island College Hospital, Brooklyn, 1907; member of the Medical Society of the State of New York; served during World War I; assistant visiting surgeon on the staff of the Cumberland Hospital; secretary of the medical board of the Madison Park Hospital; aged 61; died, February 16.

Henry Bacon, Jacksonville, Fla.; Bellevue Hospital Medical College, New York, 1883; member of the Florida Medical Association; was retired with rank of brigadier general after nearly twenty-five years of service in the Florida National Guard; for many years on the staff of St. Luke's Hospital; aged 84; died, February 8.

Robert Black Hopkins @ Milton, Del.; Jefferson Medical College of Philadelphia, 1887; past president of the Medical Society of Delaware; member of the board of education of Milton and past president of the county board of education; formerly mayor; at one time member of the state legislature; aged 76; died, March 8.

Jack Halton, Sarasota, Fla.; Miami Medical College, Cincinnati, 1895; member and formerly vice president of the Florida Medical Association; past president of the Florida Railway Surgeons Association; served during World War I; aged 73; died, February 26, in St. Petersburg of coronary thrombosis.

George Joseph Tusson, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1901; assistant demonstrator in the microscopic laboratory at his alma mater, 1907-1908; veteran of the Spanish-American War; on the staff of the French Hospital; aged 74; died, January 17.

Joseph Wright McCreedy @ Newburgh, N. Y.; Bellevue Hospital Medical College, New York, 1888; an Affiliate Fellow of the American Medical Association; member of the Medical Society of the State of New York; aged 78; died, Dec. 31, 1941, of cerebral hemorrhage, hypertension and arteriosclerosis.

Albert Frederick Ullman, New York; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany,

1914; member of the Medical Society of the State of New York; on the staff of the Hospital for Joint Diseases; aged 52; died, January 20, in Bellevue Hospital.

Franz Pfister, Milwaukee; University of Wooster Medical Department, Cleveland, 1895; past president of the Milwaukee County Medical Society; formerly professor of ear, nose and throat at the Marquette University School of Medicine; aged 81; died, March 2, of pneumonia.

C. Curtis Hudson @ Greensboro, N. C.; University College of Medicine, Richmond, Va., 1910; served during World War I; health officer; formerly health officer of Danville, Va., Charlotte, N. C., and Richmond, Va.; aged 60; died, February 17, of coronary occlusion.

Frederick Prescott Batchelder, Boston; Boston University School of Medicine, 1891; professor emeritus of physiology at his alma mater; consultant on the staff of the Massachusetts Memorial Hospitals; aged 77; died, February 14, of carcinoma of the left kidney.

James Thomas Ferrell, Chapmanville, W. Va.; West Virginia College of Medicine and Surgery, 1913; member of the West Virginia State Medical Association; aged 56; died, February 9, in a hospital at Huntington of anaphylactic shock and hypertrophy of the prostate.

Arthur M. Bishop, Good Hope, Ill.; Northwestern University Medical School, Chicago, 1898; member of the Illinois State Medical Society; aged 70; died, January 11, in St. Luke's Hospital, St. Louis, of injuries received in an automobile accident on Dec. 30, 1941.

Franklin Herbert Hagerman, Milwaukee; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1892; member of the State Medical Society of Wisconsin; aged 80; died, February 1, in the Milwaukee Hospital of carcinoma of the bladder.

Andrew Peters @ Springfield, Mass.; Columbia University College of Physicians and Surgeons, New York, 1914; member of the American College of Chest Physicians; chief, tuberculosis service, Health Department Hospital; aged 51; died, January 8.

George Van Wyland @ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; on the staff of St. Anne's Hospital; aged 71; died, March 23, of injuries received in an automobile accident.

George Irvine I. Ireland, Tyler, Pa.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1923; member of the Medical Society of the State of Pennsylvania; aged 41; died, February 8, in Mill Run of malignant hypertension.

Joseph E. Hawley, Burr Oak, Kan.; St. Joseph (Mo.) Hospital Medical College, 1882; member of the Kansas Medical Society; past president of the Jewell County Medical Society; aged 89; died, February 11, of hypostatic pneumonia.

Peter Joseph Fleming, Boston; University of Western Ontario Medical School, London, Ont., Canada, 1902; member of the Massachusetts Medical Society; aged 66; died, Dec. 15, 1941 of chronic lymphatic leukemia and bronchopneumonia.

Thomas Buffington Bird, Baton Rouge, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1914; member of the Louisiana State Medical Society; served during World War I; aged 54; died, February 6, of carcinoma.

Perry Arnold Kendall @ Crothersville, Ind.; University of Louisville (Ky.) Medical Department, 1893; aged 72; died, February 1, in St. Joseph's Infirmary, Louisville, Ky., of diabetes mellitus, arteriosclerosis and ulcer of the stomach.

Scott M. Huff, Belleville, N. J.; Jefferson Medical College of Philadelphia, 1893; served during World War I; formerly on the staff of the Veterans Administration Facility, Lyons; aged 73; died, February 25, of cerebral hemorrhage.

Charles Howard Dalton @ Somerville, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1901; on the staff of the Somerville Hospital; aged 65; died, February 12, of coronary thrombosis.

Joseph Casimer Ciesla, Chicago; University of Illinois College of Medicine, Chicago, 1927; member of the Illinois State Medical Society; aged 39; died, February 14, in Mexico of pulmonary tuberculosis.

John Richard Bozarth, Miami, Fla.; Rush Medical College, Chicago, 1891; aged 71; died, February 3, in the Jackson Memorial Hospital of bronchogenic carcinoma of the right lung and pleurisy with effusion.

Frank Joseph Kosek, Wilkes-Barre, Pa.; University of the South Medical Department, Swannee, Tenn., 1904; formerly city bacteriologist; aged 61; died, February 10, of carcinoma of the prostate.

James Charles Pecl * Cleveland; Ohio State University College of Medicine, Columbus, 1922; served during World War I; aged 47; died, January 9, at his home in Brecksville, Ohio, of coronary occlusion.

William P. Knight * Greensboro, N. C.; Baltimore Medical College, 1898; past president of the Guilford County Medical Society; aged 69; died, February 2, in St. Leo's Hospital of carcinoma of the lung.

Samuel James Herman, Detroit; Maryland Medical College, Baltimore, 1900; Baltimore Medical College, 1901; aged 68; died, February 20, in Los Angeles of multiple septic cerebral emboli and lung abscess.

Leon Grotowski * Chicago; Chicago College of Medicine and Surgery, 1913; served during World War I; on the staff of St. Mary of Nazareth Hospital; aged 63; died, February 4, of coronary occlusion.

Joseph Maurice Becker, Washington, D. C.; Georgetown University School of Medicine, Washington, 1934; member of the Medical and Chirurgical Faculty of Maryland; aged 33; died, January 14.

Alois Friedrich Haas, Rutland, Mass.; Medizinische Fakultät der Universität Wien, Austria, 1937; aged 28; died, February 14, in the State Sanatorium of tuberculosis of the lungs and larynx.

Anthony Augustus O'Neill, Chicago; Kansas City (Mo.) Medical College, 1890; member of the Illinois State Medical Society; fellow of the American College of Surgeons; aged 82; died, January 4.

James Luther Adams * Hobart, Okla.; College of Physicians and Surgeons, Little Rock, Ark., 1910; county health superintendent; aged 62; died, Dec. 31, 1941, of coronary thrombosis.

Frederick William Heath * Oakdale, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1933; aged 37; died, January 27, in a hospital at Alexandria of pneumonia.

Okey N. Windle, Sayre, Okla.; Maryland Medical College, Baltimore, 1905; member of the Oklahoma State Medical Association; aged 58; died, January 3, of coronary occlusion.

Isaac H. Lane, La Grange, Ga.; Atlanta Medical College, 1891; member of the Medical Association of Georgia; aged 75; died, February 25, of nephritis and coronary thrombosis.

James Christian Chestnut * Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1897; on the staff of the Stetson Hospital; aged 66; died, January 28.

William Henry Hicks, Newark, N. J.; University of the City of New York Medical Department, 1893; aged 77; died, February 13, of chronic myocarditis and chronic prostatitis.

Claude Alvah Horton, Glens Falls, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1892; aged 75; died, February 14, of myocarditis.

Austin Taylor Bryant, McKinney, Texas; Memphis (Tenn.) Hospital Medical College, 1894; aged 81; died, February 11, of coronary thrombosis.

John E. Lawson, Jeffersonville, Ind.; University of Louisville (Ky.) Medical Department, 1874; aged 87; died, February 15, of arteriosclerosis and uremia.

William Elmo Arthur * Cardiff, Md.; University of Maryland School of Medicine, Baltimore, 1892; bank president; aged 73; died, January 2.

Charles W. Boush, Beavertown, Pa.; Baltimore University School of Medicine, 1893; aged 73; died, January 26, of chronic myocarditis and arteriosclerosis.

William Robert Gaddie * Duenweg, Mo.; Hospital College of Medicine, Louisville, Ky., 1898; aged 71; died, January 11, of coronary occlusion.

Chester Harlow Gould, Pasadena, Calif.; Boston University School of Medicine, 1896; aged 70; died, February 8, in a local hospital of pneumonia.

Isaac Bright Hines, Fresno, Calif.; Boston University School of Medicine, 1890; aged 85; died, February 18, in St. Agnes Hospital of pneumonia.

Henry Francis Sears, Boston; Harvard Medical School, Boston, 1887; member of the Massachusetts Medical Society; aged 79; died, January 1.

Theodore Ferdinand Segelcke, Brooklyn; Long Island College Hospital, Brooklyn, 1898; aged 65; died, January 13, of coronary thrombosis.

Andrew Charles Topie, Cincinnati; Medical College of Ohio, Cincinnati, 1899; aged 73; died, January 6, of diabetes mellitus and pneumonia.

Campbell McGavern Chapman, Des Moines, Iowa; Rush Medical College, Chicago, 1894; aged 73, died February 13, in Miami, Fla., of heart disease.

Walter Irving Stockton, Siler City, N. C.; College of Physicians and Surgeons, Baltimore, 1914; aged 51; died, January 16, in Pittsboro.

Arthur W. Wilson, Chicago; Bennett Medical College, Chicago, 1903; aged 74; died, January 22, in Los Angeles of cerebral hemorrhage.

Joseph Watry, Evanston, Ill.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 78; died, January 22, of coronary sclerosis.

G. P. Fisher, Ethel, W. Va.; Kentucky School of Medicine, Louisville, 1908; aged 68; died, February 9, in Pocataligo of diabetes mellitus.

William T. Henry, Stevensville, Md.; College of Physicians and Surgeons, Baltimore, 1896; aged 72; died, January 25, of hemiplegia.

Ottul Klaranus Lindboe, Lac Qui Parle, Minn.; Rush Medical College, Chicago, 1887; aged 90; died, February 5, of myocarditis.

James Thomas Dean, Moorhead, Miss.; Louisville (Ky.) Medical College, 1891; aged 82; died, February 3, of chronic myocarditis.

Howard Riely Moore, Charles Town, W. Va.; College of Physicians and Surgeons, Baltimore, 1883; aged 80; died, January 10.

Perry Dickie, New York; New York Homeopathic Medical College, 1880; aged 85; died, January 20, of bronchopneumonia.

Charles Mead Griffin, West Tisbury, Mass.; Bellevue Hospital Medical College, New York, 1881; aged 84; died, Dec. 15, 1941.

William Carter, Chicago; National Medical University, Chicago, 1904; aged 71; died, January 4, in the Provident Hospital.

William Keer Fouts, Dallas, Texas; University of Louisville (Ky.) Medical Department, 1888; aged 73; died, January 15.

Martin V. Newman, Fouke, Ark. (licensed in Arkansas in 1903); aged 66; died, January 8, of carcinoma of the gall-bladder.

Joseph Maybank, Charleston, S. C.; University of Maryland School of Medicine, Baltimore, 1889; aged 72; died, January 2.

Solomon F. Oden, Brentwood, Tenn.; University of Nashville (Tenn.) Medical Department, 1872; aged 93; died January 6.

George Kennedy Frink, San Francisco; Medical College of the Pacific, San Francisco, 1887; aged 81; died, January 23.

William Augustus Griffith, Covina, Calif.; Long Island College Hospital, Brooklyn, 1889; aged 83; died, January 20.

Justus O. Enzor, Baker, Fla.; Medical College of Alabama, Mobile, 1901; aged 64; was found shot and killed, February 23.

Harper Ancel Wright, Duncansville, Pa.; Baltimore University School of Medicine, 1904; aged 60; died, January 6.

DIED IN MILITARY SERVICE

Ira Brown * Chicago; University of Oklahoma School of Medicine, Oklahoma City, 1932; was appointed a first lieutenant in the medical reserve corps of the U. S. Army, Oct. 16, 1935; became a captain April 11, 1940 and a major Feb. 1, 1942; fellow of the American College of Surgeons; formerly clinical instructor of gynecology and obstetrics at the University of Chicago, The School of Medicine; at one time associate in obstetrics and gynecology at the Chicago Lying-in Hospital and Dispensary; aged 35; was burned to death, April 10, when a fire destroyed an officers' barracks at Camp Grant, Ill.

Harry Sage Gorelick, Detroit; University of Michigan Medical School, Ann Arbor, 1930; member of the Michigan State Medical Society; commissioned a first lieutenant in the medical reserve corps of the U. S. Army March 29, 1934 and promoted to captain, July 5, 1941; formerly on the staff of the City of Detroit Receiving Hospital; aged 35; was burned to death, April 10, when a fire destroyed an officers' barracks at Camp Grant, Ill.

Bureau of Investigation

THEODORE MARGOLIN—A MODERN PROTEUS

He Promoted One Fraud One Day, Another the Next

A man of rare gifts is Theodore Margolin of Brooklyn. In his pursuit of profitable schemes to foist on a trusting public, not even the Post Office fraud orders that have been issued to debar his schemes from the mails have seemed to discourage him; he has gone merrily on his way developing new swindles to separate the credulous from their money. Apparently without training in medicine or chemistry, Margolin blossomed out as an alleged expert in bust development. Under his own name and a fancier trade style, "Developex Company," he advertised and sold through the mails what he called "Developex" for increasing the size of the bust and building up "thin or unshapely" legs to attractive proportions. For either condition his treatment constituted "a new and easy method."

It mattered not to Mr. Margolin that other "bust developers" had at various times run afoul of the postal laws and been banned from the mails by Post Office fraud orders. But the day came when the government caught up with him. After due investigation of his scheme the Post Office on June 12, 1941 ordered him to show cause why a fraud order should not be issued and the mails closed to his scheme. Even after Margolin had obtained several postponements he did not appear at the hearing when it finally occurred on August 8, nor did any one else appear there to represent him.

Nothing more wonderful than lanolin (hydrous wool fat), cocoa butter and a little water and perfume was found to make up Developex, according to the testimony of a government chemist who had analyzed it. Such a mixture contributed nothing new to medical science, as shown by an expert medical witness for the government, since hydrous wool fat and cocoa butter have for years been familiar substances to the medical profession and used chiefly as bases for ointments. This witness further testified that flat, undeveloped or sagging breasts are due to various causes, such as underweight, undernourishment, hypothyroidism, tuberculosis, anemia and failure of the endocrine glands to develop. Further, sagging breasts may result from prolonged nursing after pregnancy. He proceeded to show that a mixture like Developex could not affect the glandular system which controls the bust development or tighten or shorten the fibrous supporting bands of breasts which have been stretched by overlactation. Hence, he testified, the product is worthless for effecting any change in the size or contour of the breasts.

"Thin or unshapely" legs, this witness further testified, may be due to any one of many causes such as underweight, undernourishment, debilitating, chronic diseases, hereditary influences, glandular disorders, mineral and vitamin deficiency, bony deformities, bowlegs, knock-knees, misshapen feet and other factors. Developex of itself, he pointed out, would have no effect on the size or shape of the legs or on any disorder which might cause the legs to be thin or unshapely because it would not build up the tissues or affect the fat deposits in the body, since any absorption which it might bring about through the skin would be inconsequential.

As a result of the foregoing evidence, the Post Office on Nov. 27, 1941 issued a fraud order against the Developex Company of Brooklyn, Theodore Margolin and their officers and agents. On the same date a similar order was brought against the Legalure Company of Brooklyn and its officers and agents. The Legalure name was the trade style under which Margolin had promoted "Legalure Method," another nostrum that was supposed to make unsightly legs attractive. Its advertising blurbs were similar to those of Developex. When this case, after several postponements, finally reached a hearing on Aug. 8, 1941 neither Margolin nor any one representing him appeared to offer a defense, though a written answer denying

the charges of fraud had been submitted. A government chemist who had analyzed the cream which constituted the "treatment" testified that it consisted of a white, oily ointment of which 1.1 per cent was camphor, 8.37 per cent water and the rest fats, oils and wax, with a trace of perfume. Hence it seems to have been similar to, if not entirely identical with, Margolin's other "leg beautifier," Developex.

An expert medical witness for the government gave testimony regarding this second "leg developer" and showed it to be equally worthless. He stated further that the use of the Legalure Method might even prove dangerous to the user in instances in which diseases causing unattractive legs might call for exercises, and these the customer might neglect in favor of Legalure. Altogether the treatment was shown to be as worthless as Developex, and hence the companion fraud order against it.

But Margolin had by no means run out of anatomy for correction. Though forbidden longer to pretend to beautify America's busts and legs, he could at least claim to reduce the obese and adorn the bald—until the Post Office again might catch up with him. Soon he was angling for the two most gullible types of suckers—the fat woman who yearns for svelt lines and the bald-headed man who hopes for a hair restorer.

As an illustration of his total disregard for Post Office fraud orders, ". . . Margolin, having been advised that a fraud order was issued against Thinalax Co., at Jersey City, New Jersey, on February 10, 1941, and that another fraud order was issued against Grohair Company, at Jersey City, New Jersey, on February 15, 1941, both of which concerns were at that time owned by one Harry Hitter, purchased from said Hitter the stock in trade of said concerns, including the products known as 'Thinalax' and 'Grohair,' the mailing lists of said concerns, and the names and addresses of all persons who had been provided with the advertising literature of said concerns. . . ."

Hitter's nostrum "Thinalax" was reported by a government chemist to consist of pink coated pills whose essential constituents were extracts of belladonna and cascara sagrada with aloin, podophyllum and oleoresin of ginger. Although the advertising gave the impression that the user of these pills would not have to follow a diet, the treatment was accompanied by a "Slenderizing Menu for the Week" which prescribed what the Post Office called "an extremely limited dietary, both as to quantity and character of food permitted." A physician who testified for the government at the hearing of this case declared that the diet list in question amounted to a starvation regimen. He further testified that among other things the use of these pills would tend to produce a laxative habit—one of the conditions that the promotor warned against in the directions that came with the pills! Less than ten months later, on Dec. 3, 1941, a Post Office fraud order was issued which barred Margolin's Thinalax Company from the mails.

Hitter's nostrum "Grohair" was promoted with representations that it would grow a full head of hair on any one who used it, "no matter what condition" the user's hair was in or even if he was completely bald. According to the government chemist who analyzed it, the stuff was a hydroalcoholic liquid containing about 14 per cent of kerosene, 15 per cent of castor oil and 0.11 per cent of betanaphthol with about 60 per cent of alcohol, the remainder being water. Grohair was the second of Hitter's swindles to be scotched by a Post Office fraud order, which was issued on Feb. 15, 1941. Some time thereafter, it is reported, the business was taken over by Margolin, who purchased from Hitter all of the stock in trade, mailing lists and names of customers, just as he had done with Hitter's Thinalax Company. But, as in his experience with the latter business, a fraud order put an end to his Grohair enterprise. on Dec. 3, 1941.

From the record, do not be surprised to find Margolin blossoming out some time with a "cure" for projecting ears or flapping ears. And then of course the Post Office Department will investigate and there will be another fraud order, and so on and on and on through the years.

Correspondence

VITAMIN K FOR THE NEWBORN

To the Editor:—Is administration of vitamin K to the newborn of clinical value? This question has been answered guardedly by Sanford and associates in *THE JOURNAL* of February 28 but confidently by Quick in a communication to *THE JOURNAL* of March 21. The difference of opinion represents the chasm between a clinical and a chemical evaluation of the problem. Not all hemorrhagic manifestations in the newborn are due to acute hypoprothrombinemia, and not all cases of "hemorrhagic disease of the newborn" are due to diminution in blood prothrombin.

The clotting mechanism may be defective in platelets, leading to thrombocytopenic purpura; in platelet function, leading to thrombopathy; in fibrinogen, leading to fibrinogenopenia; in vascular resistance, leading to allergic, infectious or toxic purpura. The clotting mechanism may be normal, and yet bleeding may occur from vascular injury incident to the birth process. In the past, hemorrhagic disease of the newborn was a syndrome attributed to any defect in the clotting mechanism excluding vascular injury. Today, hemorrhagic disease of the newborn is a disease entity due specifically to prothrombin deficiency. This concept was formulated by me from 9 case reports published in *THE JOURNAL* Sept. 10, 1932, page 895.

Acute hypoprothrombinemia in the newborn is the only condition that responds promptly to vitamin K therapy. Since the disease occurs in less than 0.5 per cent of all newborn infants it is folly to waste vitamin K on 99.5 per cent of the remainder, even if many of these may show hemorrhagic manifestations! If the latent hemorrhagic tendency present in all newborn infants becomes active, the rise in clotting time will indicate decrease in available prothrombin. Then and only then is vitamin K therapy indicated.

I. NEWTON KUGELMASS, M.D., New York.

To the Editor:—Dr. Sanford and his associates in an article entitled "Is Administration of Vitamin K to the Newborn of Clinical Value?" (*THE JOURNAL*, February 28, p. 697) seriously question the value of vitamin K in the prophylaxis and treatment of hypoprothrombinemia and associated hemorrhage of the newborn. I am forced to join with Dr. Quick in taking prompt and sharp exception to Dr. Sanford's conclusions.

Early in 1939 in a brief preliminary article my associates and I called attention to the prompt and efficient action of vitamin K in the prevention and treatment of hypoprothrombinemia and hemorrhage in the newborn and have repeatedly stated that hemorrhagic disease would not occur in any infant adequately protected with vitamin K. We have also repeatedly expressed the hope, adequately supported by facts, that infant mortality resulting from intracranial hemorrhage will in the future possibly be materially reduced by this sound therapeutic procedure. Just how well these therapeutic suggestions have proved to be accomplished facts is well attested by the rapidly accumulating literature on this subject. With the single exception of Dr. Sanford there would seem to be complete agreement among all investigators of this subject. As Dr. Quick points out, the efficiency of vitamin K in the prevention and treatment of hemorrhagic disease of the newborn is "unequivocally and emphatically" proved. Having recorded more than two thousand prothrombin time determinations and treated an equal number of infants with vitamin K, I cannot agree with Dr. Sanford in his conclusions. I have yet to see recorded a single case of hemorrhagic disease with associated prothrombin deficiency occurring in any infant adequately protected with vitamin K, and it should be emphasized that treated infants now can be numbered in the thousands.

Dr. Sanford's series of only 42 infants treated with vitamin K through the mothers certainly does not justify any discussion concerning the possible reduction in the mortality rate of intracranial hemorrhage. Certainly his figures can hardly be compared with those of Hellman and Shettles (*South. M. J.* 35:289 [March] 1942). Their mortality of 1.9 per cent among 1,042 infants treated through the mother compared to a mortality of 3.9 per cent among 1,206 untreated infants, with the odds against this being an accident 194.7 to 1, is most convincing. Beck, working in three different hospitals, was able to reduce his infant mortality rate by 3:1. Such convincing reports can hardly be accidental.

Dr. Sanford's experience with the rates of hemorrhage in treated and control groups of infants differs considerably from our own observations and those of Beck (*Am. J. Obst. & Gynec.* 41:765 [May] 1941):

	Controls, Cases	Incidence of Hemorrhage, per Cent	Treated, Cases	Incidence of Hemorrhage, per Cent
Sanford.....	982	6.6	711	6.59
Beck.....	1,037	2.0	1,022	0.5
Waddell.....	219	10.4	1,118	1.07

There seems no good reason why Sanford should be able to show any reduction in the rate of cerebral accidents, since in his series the infant was not treated through the mother. Beck's series tells a different story, with 14 instances of intracranial hemorrhage in a group of 1,037 controls as contrasted with 4 instances of intracranial hemorrhage among 1,022 treated infants.

I had the privilege of assisting in a round table discussion of hemorrhage in the newborn at the recent meeting of the American Academy of Pediatrics. Associated with me in these discussions were Drs. Clifford, Poncher and Snelling, all of whom have had intimate experience with the therapeutic efficiency of vitamin K. All four members of this round table discussion were in complete agreement concerning the role of vitamin K in the prevention and treatment of hypoprothrombinemia and hemorrhage in the newborn. These discussions will shortly be published.

I hope, Mr. Editor, in fairness to infants yet to be born and liable to the potential danger of latent hypoprothrombinemia, that you will give this communication early publication. I trust that those members of the medical profession not conversant with the current literature on this subject will not be encouraged to deny to newborn infants a proved and efficient therapeutic agent.

W. W. WADDELL JR., M.D., University, Va.

PHONOGRAPHIC RECORDING OF HEART SOUNDS

To the Editor:—There has been some correspondence in *THE JOURNAL* in recent weeks about phonographic recording of heart sounds.

For historical interest, I would add that Dr. Richard Cabot made such recordings from Oct. 31, 1925 to Jan. 6, 1926 in New York City with the Columbia Phonograph Company, now the Columbia Recording Corporation. I have some of his old records, which are interesting rather because of their excellent reproduction of Dr. Cabot's voice than for their value in phonocardiography, a characteristic still true of many other such records, though improvements are in progress in the effort to develop this procedure into a practical method of teaching and of recording.

PAUL D. WHITE, M.D., Boston.

Council on Medical Education and Hospitals

CONTINUATION COURSES FOR PRACTICING PHYSICIANS

In accordance with the plan of the Council on Medical Education and Hospitals, advance information concerning continuation courses for practicing physicians available in the various centers is published quarterly. The following list consists of courses

beginning during the period April 20-July 20, 1942. It is hoped that this material will be useful to the practicing physician who is planning to take postgraduate work but does not have a ready means of knowing when and where the subjects in which he is interested will be taught. Since many of the classes are necessarily limited, those who contemplate enrolling in any of these courses are urged to communicate as early as possible with the proper executive officer.

H. G. WEISKOTTEN, M.D.,
Secretary, Council on Medical
Education and Hospitals.

Continuation Courses for Practicing Physicians, April 20-July 20, 1942

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
ALLERGY					
Harvard Medical School, Courses for Graduates	July 6	Full time, 2 weeks; diagnosis and treatment, prep. of vaccines	6 ¹	\$50	Dr. Frank R. Ober, Asst. Deao, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
New York University College of Medicine	May 15	MWF afternoons; lab. technique	Limited ²	\$150	Dr. Currier McEwen, Dean, New York University College of Medicine, 477 First Avenue, New York City
	July 16	MWF afternoons; hypersensitivity 6 mo.			
Tufts Medical School, Post-Graduate Division	May 18	1 week; lectures, clinic demonstrations	Minimum: 6	\$25 ³	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, Boston, Mass.
University of Michigan, Department of Post-Graduate Medicine	May 11	5 days	.....	\$10-\$25	Dr. James D. Bruce, Chairman, Department of Post-Graduate Medicine, University of Michigan, 1313 E. Ann Street, Ann Arbor, Mich.
University of Pennsylvania, Graduate School of Medicine	Arranged on application	4 weeks, about 40 hours	Individual ⁴	\$150	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medico-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
ANATOMY—See also Gynecology, Otolaryngology, Psychiatry and Neurology, and Surgery					
Harvard Medical School, Courses for Graduates	July 6	Full time, 6 weeks; microscopic anatomy	.....	\$60 ⁵	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	60 hours; applied anatomy of the urogenital system	... ..	\$150 ⁶	Dr. J. A. W. Hettrick, Acting Dean, New York Medical College, Flower and Fifth Avenue Hospitals, 5th Ave. at 16th St., New York City
	Arranged on application	60 hours; applied anatomy of ear, nose and throat	.....	\$150 ⁶	
	Arranged on application	90 hours; applied anatomy of pelvis and abdomen	.....	\$250	
	Arranged on application	100 hours; surgical anatomy ⁷	.. ...	\$250	
ANESTHESIOLOGY					
Columbia University, including the New York Post-Graduate Medical School	Arranged on application	12 sessions	24 ⁴	\$75 ⁵	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
	When a vacancy occurs	2 weeks, or 3 weeks if desired	1 ⁴	\$100-\$150	
Harvard Medical School, Courses for Graduates	Monthly	Arranged on application	3	\$90	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
New York Polyclinic Medical School	1st of any month between Oct. 1 and June 30	Arranged on application	... ..	Arranged	Dr. F. H. Dillingham, Executive Officer, New York Polyclinic Medical School, 325 West 50th Street, New York City
New York University College of Medicine	April 20	Full time, 3 weeks; inhalation anesthesia	5	\$150	Dr. Currier McEwen, Dean, New York University College of Medicine, 477 First Avenue, New York City
University of Georgia School of Medicine	Arranged on application	Several weeks; training for government service	Limited	None	Dean, University of Georgia School of Medicine, University Place, Augusta, Georgia
BACTERIOLOGY—See also Gastroenterology; Medicine					
Columbia University, including the New York Post-Graduate Medical School	May	Full time, 1 month; practical technique of medical bacteriology	2 ²	\$100	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Harvard School of Public Health	May	MWF afternoons, 1 month; applied immunology	Limited ²	\$65 ³	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 55 Shattuck Street, Boston, Massachusetts
	Arranged on application	Arranged; immunology and the technique of serum study	Limited ²	\$65 ³	
	Arranged on application	Arranged; research in communicable diseases	Limited ²	\$65 ³	
New York Polyclinic Medical School	1st of any month between Oct. 1 and June 30	Arranged	Limited ²	Arranged	Dr. F. H. Dillingham, Executive Officer, New York Polyclinic Medical School, 325 West 50th Street, New York City
BIOLOGICAL CHEMISTRY					
Harvard Medical School, Courses for Graduates	Arranged on application	Arranged; research	... ..	Arranged ^{2,3}	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
Harvard School of Public Health	Arranged on application	Arranged; nutrition	Limited ²	\$65 ³	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 55 Shattuck Street, Boston, Massachusetts
BRONCHO-ESOPHAGOSCOPY—See also Surgery					
Columbia University, including the New York Post-Graduate Medical School	Arranged on application, Oct.-Apr.	3 weeks; instruments and technique of bronchoscopy	Limited ⁴	\$250	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
BRONCHO-ESOPHAGOSCOPY—See also					
Harvard Medical School, Courses for Graduates	Surgery—Continued Arranged on application	2 weeks	Limited ⁴	\$150	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
New York Eye and Ear Infirmary, School of Ophthalmology and Otology	Arranged on application	2 or 6 weeks; broneho-esophagology	4 ²	\$150 ²⁰	Mabel R. Stewart, Registrar, School of Ophthalmology and Otology, New York Eye and Ear Infirmary, 218 Second Ave., New York City
CANCER					
Tufts Medical School, Post-Graduate Division	Arranged on application	Arranged	Minimum: ⁴	Arranged	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennet Street, Boston, Massachusetts
CARDIOLOGY—See also Internal Medicine					
Columbia University, including the New York Post-Graduate Medical School	June 15	Full time, 3 weeks; cardiovascular diseases	4-15 ²	\$75 ⁵	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Harvard Medical School, Courses for Graduates	July 1	Full time, 1 month; modern diagnosis and treatment of heart disease	20	\$150	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	16 biweekly sessions; clinical cardiology and electrocardiography	.....	\$100	Dr. J. A. W. Hetrick, Acting Dean, New York Medical College, Flower and 5th Avenue Hospitals, Fifth Ave. at 105th St., New York City
Tufts Medical School, Post-Graduate Division	May 11	Full time, 1 week	.....	\$25 ³	Dr. Samuel Proger, Chairman, Tufts Medical School Post-Graduate Division, 30 Bennet Street, Boston, Mass.
University of Michigan, Department of Post-Graduate Medicine	May 14	Full time, 3 days; diseases of the heart	.....	\$10 ²⁵	Dr. James D. Bruce, Chairman, Department of Post-Graduate Medicine, University of Michigan, 1313 East Ann St., Ann Arbor, Mich.
CYSTOSCOPY—See Gynecology, Surgery, Urology					
DERMATOLOGY AND SYPHILOLOGY					
Columbia University, including the New York Post Graduate Medical School	Enter when vacancy occurs	3 mornings a week for 6 weeks or 3 months; diagnosis and treatment of syphilis	6 per section	\$25 ¹⁴⁰ ⁵	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
	Enter when vacancy occurs	3 mornings or afternoons a week, 6 weeks or 3 months; clinical	20 per section	\$40 ⁷⁵ ^{10, 6}	
	Enter when vacancy occurs	3 afternoons a week for 6 weeks or 3 months; practical instruction in dermatologic allergy and immunology	3 per section	\$40 ⁷⁵ ⁸	
	Enter when vacancy occurs	3 afternoons a week for 6 weeks or 3 months; practical instruction in diagnosis and management of syphilis	3 per section	\$40 ⁷⁵ ⁶	
	Arranged on application	3 mornings or afternoons a week, for 6 weeks or 3 months; practical instruction in minor dermatologic surgery	2 per section ⁴	\$40 ⁷⁵ ⁸	
	Arranged on application	3 mornings or afternoons a week for 6 weeks or 3 months; practical instruction in mycology and animal parasitology as related to diseases of the skin	3 per section ⁴	\$40 ⁷⁵ ⁶	
	Enter when vacancy occurs	3 afternoons a week for 6 weeks or 3 months; practical instruction in physical therapy	3 per section	\$40 ⁷⁵ ⁶	
	May 4	Full time, 6 days; seminar in practical dermatology and syphilology	Minimum: 12	\$25 ⁸	
Harvard Medical School, Courses for Graduates	Every 2 mos.	2 mornings a week, 2 months; clinical mycology	6	\$50	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	Arranged on application	Full time or mornings; general dermatology; afternoons: skin ward work (elective)	Limited ²	Arranged	
	July	MWF mornings, 1 month; dermatology	.....	\$40	
	Monthly	Mornings, 1 month; dermatology	.....	\$40	
	May	MW mornings, 1 month; occupational dermatoses	.....	\$40	
Harvard School of Public Health	Arranged on application	3 afternoons a week, Saturday mornings; clinical instruction in syphilis	Limited ²	\$65 ⁹	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 55 Shattuck Street, Boston, Massachusetts
	Arranged on application	Short course; methods of serological diagnosis	Limited ²	\$65 ⁹	
Tufts Medical School, Post-Graduate Division	May 18	1 week; dermatology	Minimum: 6	\$25 ³	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennet Street, Boston, Massachusetts

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
DIETETICS —See also Biological Chemistry, Tufts Medical School, Post-Graduate Division	Internal Medicine, Medicine Arranged on application	Medicine Arranged	4	Arranged	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennett Street, Boston, Massachusetts
ELECTROCARDIOGRAPHY —See also Cardiology Columbia University, including the New York Post Graduate Medical School	May 18 May 5	Full time, 5 days TT mornings, 4 weeks; advanced course	Minimum: 4 Minimum: 3	\$50 * \$50 *	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Tufts Medical School, Post Graduate Division	May 11	5 days	Limited *	\$25 *	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennett Street, Boston, Massachusetts
University of Pennsylvania, Graduate School of Medicine	Arranged on application	5 days, about 30 hours	Individuals *	\$60	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
ENDOCRINOLOGY —See also Gynecology, Harvard Medical School, Courses for Graduates	Medicine Any time	Daily; diabetes	Physicians welcome	None	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 55 Shattuck Street, Boston, Massachusetts
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	9 biweekly sessions; endocrine and metabolic disturbances, including diabetes mellitus	.	\$100	Dr. H. A. W. Hetrick, Acting Dean, New York Medical College, Flower & Fifth Ave. Hospitals, 5th Ave at 105th St., New York City
Tufts Medical School, Post Graduate Division	May 25	1 week	.	\$25 *	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennett Street, Boston, Massachusetts
University of Pennsylvania, Graduate School of Medicine	Arranged on application	2-4 weeks, about 75 hours; diabetes mellitus	Individuals *	\$150	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
ENDOSCOPY —See Gynecology; Surgery					
EPIDEMIOLOGY Harvard School of Public Health	Arranged on application	Arranged; special problems	Limited *	\$65 *	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 55 Shattuck Street, Boston, Massachusetts
FORENSIC MEDICINE New York University College of Medicine	Arranged on application	Part time (at least 18 hours weekly); courses in necropsy, toxicology, forensic medicine	Limited *	\$25-\$100	Dr. John H. Mulholland, Asst. Dean, New York University College of Medicine, 477 First Avenue, New York City
GASTROENTEROLOGY —See also Anatomy, Columbia University, including the New York Post Graduate Medical School	Internal Medicine, Surgery May 6	3 hours a week for 12 weeks; gastroscopy	14	\$75 *	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
	Arranged on application	3 afternoons a week for 2 months; gastroscopy	14	\$200	
Hahnemann Medical College of Philadelphia	Arranged on application	Arranged; gastroscopy, duodenal biliary drainage, microscopy of bile, bacteriological technique	.	Arranged	Dr. William A. Pearson, Dean, Hahnemann Medical College, 235 North 15th Street, Philadelphia, Pennsylvania
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	5 sessions; peritoneoscopy	.	\$30 12	Dr. J. A. W. Hetrick, Acting Dean, New York Medical College, Flower & Fifth Avenue Hospitals, 5th Ave at 105th Street, New York City
	Arranged on application	10 morning sessions; gastroscopy	.	\$100 12	
University of Chicago, The School of Medicine	June 22	3 months; gastroscopy	1	\$150	Dr. Victor Johnson, Dean, University of Chicago, The School of Medicine, Chicago, Illinois
	July 27	2 weeks; gastroscopy	3	\$100	
GASTROENTEROLOGY —See also Anatomy, University of Michigan, Department of Post Graduate Medicine	Internal Medicine, Surgery—Continued May 11	3 days	.	\$10-\$25	Dr. James D. Bruce, Chairman, Department of Post Graduate Medicine, University of Michigan, 1313 East Ann Street, Ann Arbor, Michigan
University of Pennsylvania, Graduate School of Medicine	Arranged on application	10 weeks, about 500 hours; clinical	Individuals *	\$100	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
GASTROSCOPY —See Gastroenterology					
GYNECOLOGY —See also Medicine, Obstetrics, Pathology, Columbia University, including the New York Post Graduate Medical School	Surgery, Urology, Venereal Disease 15 sessions, MWF mornings or afternoons; cystoscopy and endoscopy	6	6	\$75 *	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
	Enter 1st Monday of any month when a vacancy occurs	10 sessions, 3 mornings or afternoons a week; diagnosis and office treatment	6	\$40 *	
	Monthly	15 sessions, MWF afternoons; diagnosis and office treatment	6	\$50 *	
	Monthly	24 sessions; TTS mornings; gynecological endocrinology	4 *	\$100 *	
	Enter 1st Monday of any month when a vacancy occurs	4 or more hours weekly for 4 weeks or longer; gynecological pathology	..	Arranged *	
	Arranged on application	12 sessions, TTS mornings, for 4 weeks; surgical anatomy as applied to operative gynecology (cadaver)	2-3 *	\$300 *	

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
GYNECOLOGY—See also Medicine, Obstetrics, Pathology, Surgery, Urology, Venereal Disease					
Harvard Medical School, Courses for Graduates	June, July	Surgery, Urology, Venereal Disease Mornings for 1 month	4 per month ¹	\$75	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	Monthly	10 sessions, 2 mornings and evenings a week; gonorrhea in women	3	\$20	
HEMATOLOGY—See also Surgery					
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	16 biweekly sessions; physical diagnosis and hematology, especially in diseases of the thoracic organs	.....	\$100	Dr. J. A. W. Hetrick, Acting Dean, New York Medical College, Flower & 5th Avenue Hospitals, 5th Ave. at 165th St., New York City
Tufts Medical School, Post-Graduate Division	July 6	2 weeks	.....	\$75 ²	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennet Street, Boston, Massachusetts
University of Michigan, Department of Post-Graduate Medicine	May 19	5 days; diseases of blood and blood-forming organs	.....	\$10-\$25	Dr. James D. Bruce, Chairman, Dept. of Post-Graduate Medicine, University of Michigan, 1313 East Ann Street, Ann Arbor, Michigan
INFANTILE PARALYSIS					
University of Minnesota, The Medical School	Arranged on application	Arranged; Kenny method of treatment	.....	Arranged	Dr. William A. O'Brien, Director, Department of Post-Graduate Education, The Medical School, University of Minnesota, Minneapolis, Minnesota
INTERNAL MEDICINE					
Columbia University, including the New York Post-Graduate Medical School	May 4 ¹³	Full time, 4 weeks	10	\$100	Secretary for Medical Instruction, The Mount Sinai Hospital, Fifth Ave. at 100th St., New York City
Harvard Medical School, Courses for Graduates	May	Full time, 1 to 4 months ¹⁴	.....	\$150 per month	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
Meharry Medical College	June 1	4 sessions, 2 weeks; gastrointestinal diseases from nutritional deficiency and cardiovascular diseases	Limited ¹⁵	\$20	Dr. Edward L. Turner, President, Meharry Medical College, Nashville, Tennessee
New York University College of Medicine	Monthly, Oct.-May	6 mornings a week for 1 month; practical review	Limited	\$50	Dr. Charles H. Nammach, Director, Fourth Medical Division, Bellevue Hospital, 26th Street and East River, New York City
Tufts Medical School, Post-Graduate Division	May 4	4 weeks	.....	\$50 ²	Dr. Samuel Proger, Chairman, Post-Graduate Division, Tufts Medical School, 30 Bennet Street, Boston, Massachusetts
University of Michigan, Department of Post-Graduate Medicine	June 29	4 weeks	.....	\$10-\$25	Dr. James D. Bruce, Chairman, Department of Post-Graduate Medicine, University of Michigan, 1313 East Ann Street, Ann Arbor, Michigan
MEDICINE					
Columbia University, including the New York Post-Graduate Medical School	May 25	Full time, 5 days; clinical interpretations of laboratory data	Minimum:4	\$35 ⁸	The Director, Columbia University School of Medicine, 809 East 20th Street, New York City
	June 1 ⁹	Full time, 5 days; diseases of the liver and biliary tract	Minimum:4	\$35 ⁹	
	May 4	Full time, 4 weeks; intensive course	Minimum:10	\$100	
	May 11	Full time, 5 days; metabolism, including endocrinology and nutrition	Minimum:4	\$35 ⁸	
	June 15	Full time, 10 days; symposium on medicine	Minimum:10	\$50 ⁸	
New York Polyclinic Medical School	Arranged on application	Full time, 6 weeks; fundamentals of medicine and surgery for general practitioners	.....	\$100	Dr. F. H. Dillingham, Executive Officer, New York Polyclinic Medical School, 335 West 50th Street, New York City
Pacific Northwest Medical Association, Meeting at Portland, Ore.	June 17	4 days; physiology, bacteriology, meningology, medicines, surgery, urology, military medicine	Limited ¹⁶	\$12 ¹⁷	Dr. Clyde W. Countryman, Secretary-Treasurer, Pacific Northwest Medical Association, 407 Riverside Avenue, Spokane, Washington
Tenth Annual Graduate Short Course for Doctors of Medicine	June 22	6 days; medicine, pediatrics, gynecology, surgery, venereal diseases, obstetrics	Limited ¹⁸	\$5	Dr. T. Z. Cason, Chairman, Medical Post-Graduate Drive Committee, Florida Medical Association, 2033 Riverside Avenue, Jacksonville, Florida
University of Georgia, School of Medicine	June 15	10 days	Limited ¹⁵	None	The Dean, University of Georgia School of Medicine, University Place, Atlanta, Georgia
University of Wisconsin Medical School	April 20	5 days; elect 1 or 2: medicine, pediatrics, surgery, obstetrics and gynecology	20 ¹⁸	\$7.50	Dr. Wm. S. Middleton, Dean, University of Wisconsin Medical School, 418 North Randall Avenue, Madison, Wisconsin
MILITARY MEDICINE—See also Medicine					
State of New York Department of Health, Local Health Administration	May	Full time, 2 days; medical aspects of gas warfare	Limited ¹⁹	None	Dr. H. van Zile Hyde, Regional Medical Officer, Second Civilian Defense Region, Office of Civilian Defense, 111 Eighth Avenue, New York City
NEUROLOGY—See Psychiatry and Neurology					

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
OBSTETRICS—See also Medicine, Pathology, Pediatrics, Public Health					
The Chicago Maternity Center	May	4 months	. . .	\$10	Dr. Beatrice E. Tucker, Medical Director, The Chicago Maternity Center, 15 South Newberry Avenue, Chicago, Ill.
Columbia University, including the New York Post Graduate Medical School	1st of any month from Jan-Oct	Full time for 3 mos.; internship training	....	\$350	The Director, Columbia University School of Medicine, 302 East 20th Street, New York City
	1st of any month	1 month; observation course	.. . .	\$100	
Duke Medical School and Hospital	Arranged on application through July 1st or later	5 days; obstetrics and pediatrics	46-0	None ²¹	Dr. G. M. Cooper, North Carolina State Board of Health, Raleigh, North Carolina
Harvard Medical School, Courses for Graduates	Monthly	1 month or more; clinical	8 ¹	\$125	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
Indiana University School of Medicine	Arranged on application	Arranged	10	\$10	Dr. C. J. Clark, Chairman, Indiana University School of Medicine, Indianapolis, Indiana
	July 13	Full time, 2 weeks; obstetrics and gynecology	6 ²	\$10-1-2	Dr. C. P. Huber, Director, Post Graduate Course in Obstetrics, Indiana State Board of Health, 1038 West Michigan Street, Indianapolis, Indiana
Louisiana University Medical Center	June 1	2 weeks; intensive refresher course	Limited ²³	None ²¹	Dr. V. E. Webb, Chief, Division of Maternal and Child Health, Louisiana Department of Health, New Orleans, Louisiana
North Dakota State Department of Health (at Center for Continuation Study, U. of Minnesota)	May 11	6 days	4 ²⁴	None ²¹	Dr. William A. O'Brien, Director, Center for Continuation Study, U. of Minnesota, Minneapolis, Minn.
North Dakota State Department of Health (at University Hospital, U. of Iowa, Iowa City)	Weekly, April-June	1 week; obstetrics and gynecology	Limited ²	None ²¹	Dr. Frank J. Hill, Acting State Health Officer, North Dakota State Department of Health, Bismarck, North Dakota
University of Chicago, School of Medicine	May 11	4 weeks	7	\$25-2	Postgraduate Course, Department of Obstetrics and Gynecology, University of Chicago School of Medicine, 5415 Drexel Avenue, Chicago, Illinois
University of Minnesota, The Medical School	May 12	4 days	60	\$25	Dr. William A. O'Brien, Director, Department of Post Graduate Education, The Medical School, University of Minnesota, Minneapolis, Minnesota
University of Nebraska, College of Medicine	Arranged on application	Full time, 2 weeks; obstetrics, gynecology, pediatrics	2	\$10-2	Dr. C. W. M. Poynter, Dean, 42 Street & Dewey Avenue, Omaha, Nebraska
OPHTHALMOLOGY—See also Anatomy, Radiology, Surgery					
Columbia University, including the New York Post Graduate Medical School	Arranged on application	15 sessions, 2½ hrs. each, longer sessions arranged in units of 12 sessions; embryology, histology and pathology of the eye	Minimum 14	\$75*	The Director, Columbia University School of Medicine, 302 East 20th Street, New York City
New York Eye and Ear Infirmary, School of Ophthalmology and Otolaryngology	1st of any month	Part time for 1 to 3 months	48 ²	\$10-100-0	Mabel R. Stewart, Registrar, School of Ophthalmology and Otolaryngology, New York Eye and Ear Infirmary, 215 Second Avenue, New York City
Tufts Medical School, Post Graduate Division	Monthly	NW 1 mornings	Limited	\$50 ³	Dr. Samuel Proger, Chairman, Post Graduate Division, Tufts Medical School, 30 Bennett Street, Boston, Massachusetts
University of Illinois, College of Medicine	Arranged on application	Mornings for 4 mos.	10	\$75	Mr. George Moon, Asst. to the Dean, University of Illinois College of Medicine, 1633 West Polk Street, Chicago, Illinois
University of Michigan, Department of Postgraduate Medicine	April 23	1 week; ophthalmology and otolaryngology	.	\$10-25	Dr. James D. Bruce, Chairman, Department of Postgraduate Medicine, University of Michigan, 1113 East Ann Street, Ann Arbor, Mich.
University of Pennsylvania, Graduate School of Medicine	Arranged on application	5 weeks, about 120 hours; ocular refraction	Individuals ⁴	\$270	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
	Arranged on application	8 weeks, about 96 hours; ophthalmic histology and pathology	Individuals ⁴	\$200	
OTOLARYNGOLOGY—See also Branchio-Esophagocopy, Ophthalmology, Radiology, Surgery					
Columbia University, including the New York Post Graduate Medical School	Enter when vacancy occurs	Arranged; diagnostic procedures	6 per section	\$70(1 sec.) \$50(2 sec.) for 5 weeks*	The Director, Columbia University School of Medicine, 302 East 20th Street, New York City
	Arranged on application, Sept-June	Arranged; dissection of the head and neck	Minimum 2 ¹	Arranged*	
	Arranged on application	15 sessions, 2½ hrs. each; or longer sessions arranged in units of 12 sessions; embryology, histology and pathology of the ear, nose and throat	Minimum 14	\$75*	
	Arranged on application, Sept-July	Arranged; surgical anatomy as applied to otology (endaur)	26 ⁴	Arranged*	

Continuation Courses for Practicing Physicians, April 20-July 20, 1912—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
OTOLARYNGOLOGY —See also Broncho-Esophagoscopy, Ophthalmology, Radiology, Arranged, surgical anatomy as applied to rhinology and laryngology (cadaver)					
Harvard Medical School, Courses for Graduates	Monthly, except April or August Arranged on application, except in April May 4	Full time, clinical otology Full time for 2 wks.; physiology of the cochlea and vestibular apparatus 5 days a week for 2 weeks, histology of the nose and throat	2 - 2	\$50 \$0 \$100 ²	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	Arranged on application	Arranged, technique of submucous resection of the nasal septum	Limited	\$75 per 5 exercises	
New York Eye and Ear Infirmary, School of Ophthalmology and Otology	1st of any month	Part time for 1 to 3 months, otology	4 ²	\$40 \$110 ²⁰	Mabel R. Stewart, Registrar, School of Ophthalmology and Otology, New York Eye and Ear Infirmary, 215 Second Avenue, New York City
Tufts Medical School, Post Graduate Division	Monthly	Every morning or MWF mornings for 1 month		\$0 for MWT ² \$30 for daily ³	Dr. Samuel Proger, Chairman, Post Graduate Division, Tufts Medical School, 30 Bennett St., Boston, Mass.
University of Cincinnati College of Medicine	May 11	Full time for 6 days, operative course (cadaver) otology, rhinology and laryngology	25 ⁴	\$75 ²⁵	Dr. Stanley E. Dorst, Dean, University of Cincinnati College of Medicine, Eden and Bethesda Avenues, Cincinnati, Ohio
PATHOLOGY —See also Gynecology, Ophthalmology, Otolaryngology, Psychiatry and Neurology					
Columbia University, including the New York Post Graduate Medical School	April 21	2 mornings a week for 10 weeks, surgical pathology	Minimum 4	\$45	The Director, Columbia University School of Medicine, 709 First 20th Street, New York City
Harvard Medical School, Courses for Graduates	Arranged on application July 1	Arranged, research 1 month, general and surgical		Arranged ⁵ \$60 ⁵	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	Monthly, except August	Full time, pathology of obstetrics and gynecology	2 ⁴	\$125 ⁵	
	Monthly	Arranged special staining methods, uteruses	4	\$40	
New York Polyclinic Medical School	1st of any month between Oct 1 and June 30	Arranged	Limited ²	Arranged	Dr. T. H. Dillingham, Executive Officer, New York Polyclinic Medical School, 335 West 50th Street, New York City
University of Michigan, Department of Post Graduate Medicine	July 1 ² June 29	2 weeks, pathology of female genital urinary organs 2 weeks, special pathology of neoplasms		\$10 \$25 \$10 \$25	Dr. James D. Bruce, Chairman, Department of Post Graduate Medicine, University of Michigan, 121 East Ann Street, Ann Arbor, Michigan
PEDIATRICS —See also Medicine, Obstetrics, Public Health					
Columbia University, including the New York Post Graduate Medical School	July May, June July	1 month clinical lectures and demonstrations 1 month or longer clinical, practical work Full time, 1 month, seminar	3 S 2 S 3 12	\$40 ⁸ \$100 ⁸ \$125 ⁸	The Director, Columbia University School of Medicine, 709 East 20th Street, New York City
Harvard Medical School, Courses for Graduates	July 1 ¹⁶	Full time or mornings, 1 month, review	Limited	Mornings \$5, full time \$125 ³	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
Meharry Medical College	June 1 ²	Full time for 2 wks.	Limited ¹⁵	\$20	Dr. Edward L. Turner, President, Meharry Medical College, Nashville, Tennessee
University of Minnesota, The Medical School	June 8	7 days health problems of preschool children	50 ²⁰	\$15	Dr. William A. O'Brien, Director, Department of Post Graduate Education, The Medical School, University of Minnesota, Minneapolis, Minnesota
PERITONEOSCOPY —See Gastroenterology					
PHYSICAL THERAPY					
New York Polyclinic Medical School	1st of any month between Oct 1 and June 30	Arranged	Limited ²	Arranged	Dr. F. H. Dillingham, Executive Officer, New York Polyclinic Medical School, 335 West 50th Street, New York City
PHYSIOLOGY —See also Medicine, Psychiatry and Neurology					
Harvard Medical School, Courses for Graduates	Arranged on application	Arranged research		Arranged ²	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
PROCTOLOGY —See also Surgery					
Tufts Medical School, Post Graduate Division	April 27 May 4	1 week proctology I 2 or 4 weeks proctology II (prerequisite proctology I)		\$2, ² 2 weeks \$20 4 weeks \$100	Dr. Samuel Proger, Chairman Post Graduate Division, Tufts Medical School, 30 Bennett Street, Boston, Massachusetts
PSYCHIATRY AND NEUROLOGY					
Columbia University, including the New York Post Graduate Medical School	Monthly, Oct-Nov Arranged on application, Oct-June	5 afternoons a week for 1 month or longer, clinical neurology VII morning, Friday, for 4 weeks; neuroanatomy	16 Minimum ²	\$30 ⁸ \$5 ⁴	The Director, Columbia University School of Medicine, 709 East 20th Street, New York City

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
PSYCHIATRY AND NEUROLOGY—Continued					
Harvard Medical School, Courses for Graduates	May, June	5 mornings a week for 1 month	Minimum: 4 ¹	\$50	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	July 6	5 mornings a week for 4 weeks; diagnosis and treatment of language problems	.. ..	\$50 ²	
	Arranged on application	Arranged; general psychiatry or special fields	Individuals	Arranged	
	Arranged on application	Arranged; neuroanatomy, neurophysiology, neuropathology, clinical neurology, neurosurgery	... ..	Arranged	
	Arranged on application	Arranged; research in neuropathology; research in cerebrospinal fluid is elective	Individuals	Arranged ⁵	
University of Pennsylvania, Graduate School of Medicine	Arranged on application	240 hours, 8 weeks; clinical psychiatry	Individuals ⁴	\$100	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
	Arranged on application	10 weeks, about 250 hours; clinicobiologic neurology and psychiatry	Individuals ¹¹	\$100	
PUBLIC HEALTH—See also Dermatology and Syphilology;					
Harvard School of Public Health	Arranged on application	Pediatrics; Venereal Disease Control Arranged; research in public health practice	Limited ²	\$65 ⁹	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 55 Shattuck Street, Boston, Massachusetts
Postgraduate Institute on Public Health	May 18	2 days; tuberculosis, syphilis, pediatrics, obstetrics	Limited ²⁰	None	Dr. W. Roderick Brown, Chairman, Post Graduate Institute on Public Health, 2446 Wylie Avenue, Pittsburgh, Pa.
RADIOLOGY—See also Medicine					
Harvard Medical School, Courses for Graduates	Monthly	Arranged; 3 days a week	3	\$35	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	Monthly	Full time; diagnostic and therapeutic roentgenology	2 ²	\$100	
	Monthly	Full time; general roentgenology	3 ¹	\$100	
	Monthly	Full time; use of x-ray in surgical diagnosis and therapy	Limited ²	\$50	
New York Eye and Ear Infirmary, School of Ophthalmology and Otology	1st of any Month	3 mornings a week for 6 weeks; roentgenology for ophthalmologists	2 ²	\$40 ²⁰	Mabel R. Stewart, Registrar, School of Ophthalmology and Otology, New York Eye and Ear Infirmary, 218 Second Avenue, New York City
New York Polytechnic Medical School	1st of any month between Oct. 1 and June 30	Arranged; roentgenology	Limited ²	Arranged	Dr. F. H. Dillingham, Executive Officer, New York Polytechnic Medical School, 335 West 50th Street, New York City
RHINOLOGY—See Otolaryngology					
RHINOLARYNGOLOGY—See Surgery					
Columbia University, including the New York Post Graduate Medical School	Arranged on application	Part time, 8 sessions, at least 12 hours; blood transfusion; blood and plasma bank	18	\$35 ⁸	The Director, Columbia University School of Medicine, 300 East 20th Street, New York City
	Arranged on application, Sept. June	12 sessions or more, dissection and surgical anatomy	Minimum 2 ¹	\$125 per 12 sessions ⁸	
	July 2	MWF afternoons for 1, 2 or 3 months, proctology	24 ⁴	\$150 for 3 months ⁸	
	April 20	1 week, seminar in 5 sessions, surgical	530 ⁴	\$60 ⁸	
	Arranged on application, except in July or August	traumatic surgery anatomy as applied to colon and rectal surgery (cadaver)	2 ⁴	\$75 ⁸	
	Any month but July and August when class of 2 is formed	4 afternoons a week, 12 sessions; surgical anatomy as applied to general surgery	Limited ⁴	\$200 ⁸	
	Arranged on application, except July and August	12 sessions; surgical anatomy as applied to thoracic surgery (cadaver)	20 ⁴	\$125 ⁸	
	(a) May 5-25 (b) June 22-27	(a) Part time, 3 weeks, traumatic surgery (b) Full time, 6 days, traumatic surgery	....	\$75 ⁸	
Harvard Medical School, Courses for Graduates	June 1	6 mornings a week for 1 month; clinical instruction in nonorthopaedic children's surgical diseases	8	\$50	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
	May, June, July	Full time; endoscopy	2	Arranged	
	May, June	Mornings, genito-urinary surgery; major and minor operations, use of cystoscope	4 ¹	\$75	

Continuation Courses for Practicing Physicians, April 20-July 20, 1942—Continued

Institution	Courses Begin	Length and Content of Course	Number of Students Accepted	Registration Fee and/or Tuition	For Detailed Information Write to
SURGERY—See also Special Headings—Continued					
	Monthly	Mornings; genito-urinary surgery	Limited	\$50	
	May 4	12 days; principles of plastic operations, surgery on cadaver	Limited	\$150	
	June 22	2 weeks; surgical technic	Limited	\$225	
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	60 hours; surgical technic (dog)	..	\$250 ^a	Dr. J. A. W. Hetrick, Acting Dean, New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York City
New York Polytechnic Medical School	May	4 weeks; plastic reparative surgery	Limited ²	\$350	Dr. F. H. Dillingham, Executive Officer, New York Polytechnic Medical School, 335 West 50th Street, New York City
Tufts Medical School, Post Graduate Division	May 4	12 days; applied surgical anatomy on cadaver in the evenings, elective	Limited	\$150 ³ \$175 with evening work	Dr. Samuel Proger, Chairman, Post Graduate Division, Tufts Medical School, 30 Bennet Street, Boston, Massachusetts
University of Pennsylvania, Graduate School of Medicine	June 15	2 weeks, about 85 hours; bronchoesophagology, gastroscopy and laryngeal surgery	Individuals ⁴	\$250	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
	Arranged on application	3 weeks, about 27 hours; ophthalmic operations (cadaver)	Individuals ⁴	\$270	
	Arranged on application	2 weeks, about 20 hours; otologic operations (cadaver)	Individuals ⁴	\$250	
	Arranged on application	10 days, about 20 hours; rhinolaryngologic operations (cadaver)	Individuals ⁴	\$150	
SYPHILOLOGY—See Dermatology and Syphilology, Venereal Disease Control, Gynecology					
TROPICAL MEDICINE					
Columbia University, including the New York Post Graduate Medical School	May 25	Full time for 5 days	Minimum ⁴	\$30 ⁶	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Harvard School of Public Health	Arranged on application	Arranged; medical zoology and tropical medicine ²⁶	Limited ²	\$65 ⁹	Dr. C. K. Drinker, Dean, Harvard School of Public Health, 65 Shattuck Street, Boston, Massachusetts
TUBERCULOSIS—See also Public Health					
Columbia University, including the New York Post-Graduate Medical School	May 4	Full time for 2 wks; pulmonary tuberculosis	420	\$30 ⁶	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Mississippi State Sanatorium	Arranged on application throughout the year	2 weeks or more; clinical medicine and chest diseases	..	None ²⁷	Dr. Henry Boswell, Superintendent, Mississippi State Sanatorium, Sanatorium, Mississippi
New York Medical College, Flower and Fifth Avenue Hospitals	Arranged on application	1 month; diagnosis and treatment	..	\$100	Dr. J. A. W. Hetrick, Acting Dean, New York Medical College, Flower and Fifth Avenue Hospitals, 5th Avenue at 105th Street, New York City
UROLOGY—See also Anatomy, Medicine, Pathology, Surgery					
Columbia University, including the New York Post Graduate Medical School	Arranged on application	Short courses	Individuals ⁴	Arranged ⁸	The Director, Columbia University School of Medicine, 309 East 20th Street, New York City
Harvard Medical School, Courses for Graduates	Monthly, October through May	1 month; diagnosis management of gonococcus infections, problems of female urology emphasized	..	\$75 per month	Dr. Frank R. Ober, Asst. Dean, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts
Joint Committee on Post Graduate Education	1st of every month	1 month of longer; practical	3	\$25 per month	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Avenue, Brooklyn, New York
University of Pennsylvania Graduate School of Medicine	Arranged on application	6 weeks, about 36 hours; cystoscopy, chromo-urethroscopy and pycelography	Individuals ⁴	\$300	Dr. R. C. Buerki, Dean, Graduate School of Medicine, The Medical-Chirurgical College, 237 Medical Laboratories, Philadelphia, Pennsylvania
VENEREAL DISEASE CONTROL—See also Gynecology, Dermatology & Syphilology, Medicine, Public Health					
Mobile City Hospital	Monthly, usually 3d week	1 week	Limited ²⁰	None ²¹	Dr. W. H. Y. Smith, Asst. Director, Bureau for the Prevention of Diseases, State of Alabama Department of Health, Montgomery, Alabama
Howard University, College of Medicine	July 1	Full time for 1 quarter	Limited ²²	\$15 ²⁸	Dr. John W. Lawlah, Dean, Howard University College of Medicine, Washington, D. C.
University of Pennsylvania, Institute for the Control of Syphilis	On demand or Arranged on application	(a) 12 weeks, 35 hours per week (b) Full time for 1 month	(a) 12 (b) Individuals	(a) \$25 (b) \$50	Dr. John H. Stokes, Director, Institute for the Control of Syphilis, Hospital of the University of Pennsylvania, 3400 Spruce Street, Philadelphia, Pa.

1. Male physicians only.

2. Physicians with adequate preliminary training and/or approved by the post graduate department are eligible.

3. Registration fee of \$5 covers all courses taken within 12 months.

4. Limited to specialists who have had preliminary training and experience.

5. A laboratory fee of about \$5 will be added.

6. If 2 or more students register for the course at the same time, a reduction in the fee will be made.

7. Special parts may be taken.

8. Upon application by physicians otherwise unable to meet the expense of post graduate study, grants to defray part of the tuition are made from a scholarship fund.

9. A bond of \$500 is required.

10. If two or more sections are taken, the fee will be reduced.

11. A course for students of mental institutions the next course below/above (Gastroenterology) the combined course will be \$125.

12. Register two to six weeks in advance.

13. May not be offered.

14. Negro physicians in good standing are eligible.

15. For physicians from Washington, Oregon, Montana, Utah, Province of British Columbia.

16. Members of the several Medical Corps will be admitted free of charge.

17. Applications will be accepted in the order of their receipt.

18. A course for Emergency Medical Service officers and selected physicians.

19. For state physicians. Some out of state physicians accepted.

20. State boards of health furnish funds covering tuition fees, maintenance, or transportation for physicians of the state.

21. All or part refunded on satisfactory completion of the course.

22. White registered physicians, practicing in the state.

23. Physicians recommended by the District Medical Societies who have not received a stipend for a course in the same subject within 1 year.

24. Tuition refunded if the war interferes.

25. There are some opportunities to work in hospitals or laboratories situated within the tropics.

26. Out of state physicians will be expected to pay their board.

27. Plus a matriculation fee of \$5.

28. Plus a matriculation fee of \$10.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, April 11, page 1241.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Various centers, June 22-24. *Part III*. Various centers, June or July. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral*. Groups A and B, Cleveland, Jan. 14-15, 1943. Final date for filing application is Dec. 7. *Written*. Various centers, Nov. 16. Final date for filing application is Oct. 5. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: June, Philadelphia, in advance of the meeting of the American Medical Association. Application should be on file 6 weeks in advance of the date of oral examination. *Written*. Oct. 19. Final date for filing application is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral*. New York, May 12-13. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Baltimore, June 6, and Philadelphia, June 8. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written*. Chicago, Jan. 9-10. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF RADIOLOGY: Locally, Sept. 18. *Oral*. Chicago, Nov. 23. Final date for filing application is July 1. Sec., Dr. C. A. Aldrich, 707

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Final date for filing application is Oct. 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Notice to City as Prerequisite to Suit for Malpractice.—The municipal law of the city of New York imposes liability on the city for any damages resulting from the malpractice of a physician while rendering gratuitous services to a person in a public institution maintained by the city. It further provides that no action may be maintained against the city or the physician unless the notice requirements of the law are strictly complied with. Notice of intention to commence an action against the city is required to be served on the city within six months after the cause of action accrues. On July 6, 1937 the plaintiff, a charity patient in the Fordham Hospital, underwent an appendectomy performed by the defendant physician. A gauze pad was left in the plaintiff's abdominal cavity. In January 1938 the presence of the pad was discovered and removed by another physician. Subsequently the plaintiff filed suit against the defendant physician for malpractice and on April 26, 1938, more than two months after the action was commenced, served the required notice on the city. The defendant physician filed a motion to dismiss the complaint and, from an adverse judgment, appealed to the supreme court, appellate division, first department, New York.

The plaintiff admitted that notice had not been served on the city within the required six months period but contended that her substantial compliance with the law was sufficient. She testified that she did not know of the existence of the pad in her abdominal cavity until it was removed in January 1938, and that she was then advised by the physician who removed it that she could not sue because she was a charity patient. She also testified that she underwent a hernia operation in March 1938 and was confined to her home until April 22. The plaintiff argued that these facts excused a strict compliance with the notice provision and that she served the notice as soon as she was able to do so. The appellate division pointed out that in a former appeal of this same case (*Derlicka et al. v. Leo et al.*, 22 N. E. (2d) 367, J. A. M. A. 115:2023 [Dec. 7] 1940) it had been held that a strict compliance with the notice provisions was required in a suit of this nature. Even if a substantial

compliance was sufficient, the court added, the plaintiff's proof did not indicate that degree of compliance. Her testimony showed that she was at home and in her right mind on and after March 22, 1938. She could have served the notice then, either personally or by her attorney. The fact that she did not discover the malpractice for some time did not aid her, because the right of action arose at the time the negligent act was committed whether the plaintiff knew of the negligence or not. The judgment for the plaintiff was therefore reversed and the defendant's motion to dismiss granted. The Court of Appeals affirmed the judgment of the lower court in dismissing the complaint.—*Derlicka v. Leo*, 19 N. Y. S. (2d) 949 (N. Y., 1940); 31 N. E. (2d) 47 (N. Y., 1940).

Medical Practice Acts: Use of Heat Treatment by Chiropodists.—Section 24 of the medical practice act of Illinois penalizes any person who holds himself out to the public as being engaged in the diagnosis or treatment of human ailments; or who suggests or prescribes any form of treatment for the cure or relief of any physical or mental ailments of any person with intent of receiving a fee or compensation therefor; or who shall diagnose, operate on, profess to heal or treat human ailments or maintain an office for such purpose, if he does not "then possess in full force and virtue a valid license issued by the authority of this state to practice the treatment of human ailments in any manner." The defendants, licensed chiropodists, were charged, in two separate suits which were later consolidated, with having violated the foregoing section in that they applied heat to a patient's arm and treated the blisters which resulted by the use of a hypodermic syringe, a surgical knife and the application of salve. The evidence showed that the complaining witness, accompanied by a friend, went to the defendants' shoe store and that one of the defendants wrapped a hose or cable around her shoulder, arm and wrist and turned on a machine which produced heat. After heat had been applied for some time the cable or hose was removed and it was discovered that four or five blisters had resulted from the treatment. One of the defendants opened two of the blisters with a knife, applied a green salve, bandaged the arm and directed the patient not to remove the bandages for two or three hours. On completion of the treatment, the patient paid the defendant \$5 to cover the initial treatment as well as one future treatment. Because of pain caused by the blisters, the patient returned to the defendants for treatment, one of whom then used a hypodermic syringe to draw liquid from the blisters, washed the burns, applied green salve to the sores and again bandaged the arm. From judgments of conviction, which were affirmed by the appellate court, the defendants appealed to the Supreme Court of Illinois.

The defendants first contended that, since they were licensed to practice chiropody, they were not persons who did not possess a license to treat human ailments "in any manner," and were therefore not violating section 24. The Supreme Court held that the defendants had clearly misconstrued the words "in any manner." Those words, said the court, require a person to have a valid license to practice the treatment of human ailments in the manner in which such treatment is practiced. The construction urged by the defendants, continued the court, would authorize a licensed chiropodist to practice surgery, or even the most intricate branches of medical treatment, simply by virtue of his chiropody license. The court therefore held, in effect, that, since the defendants were not licensed to practice as they did, it did not matter what other acts they were entitled to perform. The defendants next contended that a mere isolated instance of treatment did not prove that they were engaged in the practice of medicine. The Supreme Court said, however, that the acts enumerated in section 24 were in the disjunctive and that the commission of any one of them, without possessing the proper license, was a violation of the law. Finally, the defendant contended that the evidence was not sufficient to prove them guilty beyond a reasonable doubt. The Supreme Court held that the trial judge and jury had seen and heard the witnesses and were in a better position to determine their credibility. The mere fact that the defendants' evidence was contradictory to that of the state, said the court, constitutes no grounds for reversal. The judgments of conviction were therefore sustained.—*People v. Friedman (two cases)*, 29 N. E. (2d) 82 (Ill., 1942).

Chiropractic: Office Sign an Indication of Practice.—For over a year the defendant had maintained an office for the practice of chiropractic on the ground floor of a building located in the business section of South Tacoma, Wash. On the window facing the street was a sign which read "Thomas F. Bennett, Palmer Graduate, X-Ray, Chiropractic." Similar statements appeared in the classified section of the city telephone directory and on professional cards found in the defendant's reception room. At no time had the defendant possessed a license issued by the state board of chiropractic examiners. Subsequently he was charged with inducing a belief that he was engaged in the practice of chiropractic at a time when he was not licensed. The only witnesses at the trial were two inspectors from the state department of licenses. In addition to the foregoing facts, they testified that they visited and interviewed the defendant in his office on March 4, 1940. While they were waiting in the reception room, the defendant emerged from his private office with a lady to whom he remarked, "I will see you Wednesday." One of the inspectors stated that the defendant admitted that he had no license and that he thought it was unfair to require chiropractors to pass an examination. The other testified that during the interview the defendant said that he did not feel that he needed a license and that in fact he would not accept one if given to him, because a license would not make him capable of performing his work any better. The defendant did not offer any evidence on his own behalf, and the case was submitted to a jury. From a verdict of guilty and a judgment thereon the defendant appealed to the Supreme Court of Washington.

The defendant contended that the judgment should not stand because there was no proof that he had in fact performed any manual operation on a patient or that any one had been induced to believe that he was engaged in the practice of chiropractic. Section 10109 of Remington's Revised Statutes of the State of Washington provided:

Any person who shall practice or attempt to practice chiropractic, . . . or who shall use the title chiropractic, D.C., Ph.C., or any word or title to induce belief that he is engaged in the practice of chiropractic without first complying with the provision of this act, . . . shall be guilty of a misdemeanor. . . .

The court held that the jury was warranted in inferring not only that the defendant induced such a belief but that his inducement was successful. The defendant could not have maintained an office for so long a period without patients, continued the court, he could not have had patients unless they thought he was engaged in practice, and his advertisements could not have become known to the public unless they had been exposed as they were. The court therefore concluded that the defendant had induced a belief that he was engaged in the practice of chiropractic. The judgment of conviction was therefore affirmed.—*State v. Bennett*, 107 P. (2d) 344 (Wash., 1940).

Privileged Communications: No Waiver Implied by Statement in Application for Insurance; Admissibility of Autopsy Finding.—In his application for a life insurance policy with the defendant company, dated Oct. 6, 1933, the insured stated that he had never been under observation or treatment in any hospital, that he had never been treated for ulcer or diseases of the stomach and that no physician had treated him during the past five years. In reliance on the information stated in the application, the defendant issued a policy to the insured without requiring a medical examination. The insured died on July 21, 1935. In a subsequent suit by the beneficiary, the defendant resisted payment because of alleged false representations in the application. At the trial the defendant offered to introduce the testimony of a physician who claimed to have treated the deceased for peptic ulcer within five years prior to the date of the application. It offered another witness to testify that, within the same period, the deceased spent at least one night in a hospital. Finally it offered to show that the cause of death, as found by an autopsy, was a perforated duodenal ulcer. The admission in evidence of all this testimony was denied on the ground that it was within the protection of the laws of Iowa relating to privileged communications. The trial court directed a verdict for the plaintiff, and the defendant appealed to the Supreme Court of Iowa.

The defendant contended that any privilege which might have existed against the admission of such testimony had been waived

by virtue of the representations made by the deceased in his application for insurance and that the defendant had the right to offer evidence showing that such representations were not true. Concerning the testimony of the physician who had treated the deceased for peptic ulcer, the Supreme Court refused to hold that the privilege had been waived. The general rule, said the Supreme Court, should be that, when it appears that the relationship of physician and patient existed, the bar of the statute should be held applicable. The defendant, the court pointed out, could have inserted in the application an express waiver of the privilege or it could have required the insured to submit to a physical examination by its own physician. Since it did neither, it was bound by the existing statutory law relating to privileged communications.

The trial court erred, however, in the opinion of the Supreme Court, in refusing to permit a physician to testify that he had attended the insured within the five year period and that he took him to a hospital. That the physician attended the insured and prescribed for him involved no disclosure of any information obtained professionally. Testimony as to the cause of death as disclosed by the autopsy likewise was not privileged and should have been admitted. The relationship of physician and patient ends, the court pointed out, with the death of the patient. The judgment for the plaintiff was therefore reversed and the case remanded.—*Cross v. Equitable Life Assur. Soc. of the United States*, 293 N. W. 464 (Iowa, 1940).

Charitable Hospitals: Liability for Injuries to Special Nurse Employed by Pay Patient.—The plaintiff was a special nurse employed to care for a pay patient in the Georgetown University Hospital, which was owned and operated by the defendant corporation, an eleemosynary institution. While so employed she was seriously and permanently injured by the negligence of a student nurse in the regular employ of the hospital. The evidence showed that the hospital was one of the charitable activities conducted by the defendant and that the defendant had an insurance policy to protect itself from any loss imposed in a tort action arising out of the operation of the hospital. In a suit for damages against the defendant the jury found for the plaintiff, so the defendant filed a motion for judgment notwithstanding the verdict. The motion was heard in the district court of the United States for the District of Columbia.

The defendant contended that it was immune from liability either because it was a charitable institution or because the plaintiff was a beneficiary of the charity and therefore precluded from recovering for her injuries. The district court reviewed the history and development of the "total immunity" theory as applied to charitable institutions, from the early English cases down to the most recent decisions in this country, and held that the doctrine applied only to persons who had actually been the recipients of the bounty of an eleemosynary institution. The defendant then argued that the pay patient who employed the plaintiff was a beneficiary and that the plaintiff partook of the same status. The court said that, even assuming that the patient was a beneficiary, it did not follow that the plaintiff stood in a like relationship. Furthermore, many cases have held that a hospital is liable to a pay patient. Finally the defendant insisted that the plaintiff became a beneficiary of the defendant's charity, independently of her relationship to the patient, when she was permitted to enter on and use the defendant's premises to carry on her vocation as a nurse. To this argument the court answered that the hospital was established and maintained to provide "care and medical attention for suffering humanity," not to furnish a place for the employment of trained nurses. They were not the objects of its beneficent efforts even though the presence of trained nurses specially employed by individual patients may be essential to a hospital in fulfilling its merciful aims. Prior cases have held, the court pointed out, that the following persons were strangers to the charity of an eleemosynary institution and therefore not barred from recovering damages: a special nurse, a doctor attending a patient, a visiting husband, a visiting wife, a visiting friend, and a WPA carpenter temporarily working in a building of a charitable institution. The court therefore concluded that the defendant was not immune from liability for tortious injuries to a special nurse caring for

a pay patient in its hospital, and judgment was entered for the plaintiff on the verdict.—*Hughes v. President and Directors of Georgetown College*, 33 F. Supp. 867 (1940).

Medical Practice Act: Statutory Procedure for Revocation of License Must Be Strictly Construed.—The petitioner, a duly licensed physician in the state of New York, was charged with fraud and deceit in the practice of his profession. The charges were first heard, as required by the Education Law, by a subcommittee of the Committee on Grievances appointed by the Board of Regents of the University of the State of New York. The subcommittee reported its recommendations to the Committee on Grievances, which determined on the merits that the petitioner was guilty. Subsequently the Board of Regents followed the recommendations of the Committee on Grievances and suspended, for two years, the petitioner's license to practice medicine. From such action of the Board of Regents, which was approved by the Supreme Court, appellate division, third department, New York, the petitioner appealed to the Court of Appeals of New York.

The petitioner contended that the action of the Committee on Grievances was void because it was not strictly pursuant to statute. The law provides that after the subcommittee has heard the charges and reported to the Committee on Grievances, that committee "... shall determine said charges upon their merits (the vote of each member of said committee to be recorded as part of the committee's findings) ...". It appeared from the record in this case that the entire Committee on Grievances, consisting of ten members, met on Dec. 1, 1938 to determine the petitioner's guilt or innocence. The minutes of that meeting, however, show that only nine members voted, one member being recorded as "not voting." The respondent, Board of Regents of University of State of New York, contended that the lack of unanimity in the December 1 vote was legalized by a unanimous vote on Jan. 5, 1939, concerning the form of disciplinary action to which the petitioner should be subjected. The Court of Appeals refused to sustain that contention, however. It pointed out that rigid qualifications were required to be met before a license to practice medicine could be obtained and that such a license, when obtained, was a valuable right that could only be taken away by following a strict statutory procedure. Since the statute required a unanimous vote by the Committee on Grievances, concluded the court, a determination of the petitioner's guilt on the basis of a nonunanimous vote did not comply with the mandatory requirements prescribed by the legislature. The order revoking the petitioner's license was accordingly reversed.—*Hilfer v. Board of Regents of University of State of New York*, 28 N. E. (2d) 848 (New York, 1940).

Accident Insurance: Carbon Monoxide Gas as "Poison."—The defendant issued a life insurance policy which provided for the payment of double indemnity if the insured suffered an accidental death not resulting directly or indirectly from poison. During the life of this policy the insured died as a result of accidental inhalation of carbon monoxide gas. In a subsequent suit by the beneficiary to recover under the double indemnity provision, the plaintiff introduced evidence tending to show that death due to the inhalation of carbon monoxide gas is the result of asphyxiation, not poison. A physician called by the plaintiff testified that carbon monoxide, when inhaled, combines with the hemoglobin in the blood and thus prevents the absorption of oxygen and its circulation throughout the body. The result was similar to death by drowning, he said, where there is suffocation because of an insufficient supply of oxygen. Furthermore, he continued, poisons are substances which, when they enter the body, destroy the tissues in whole or in part, but carbon monoxide destroys neither tissues nor cells. In conclusion, this witness stated that death resulting from the inhalation of carbon monoxide is due to asphyxia, anoxemia, lack of oxygen in the blood; not from its poisonous action. "It [carbon monoxide gas] isn't a poison. It isn't a poisonous gas. It doesn't destroy tissue." The defendant offered no testimony but cited many dictionaries, encyclopedias and medical works referring to carbon monoxide as a poisonous gas and to its effect as carbon monoxide poisoning. The lower court entered a judgment for

the plaintiff, and the defendant insurance company appealed to the Supreme Court of Missouri, Division No. 1.

The defendant contended in effect that the fact that carbon monoxide is a poison is of such common knowledge that expert testimony should not have been admitted in an attempt to prove otherwise and that the deceased should be held, as a matter of law, to have died from poison. With this contention, the Supreme Court disagreed. In the first place, if the defendant had intended to deny a recovery for death resulting from asphyxiation by gas, the court pointed out, it could easily have so stated in the policy. The test of the meaning of words commonly used should be their ordinary and popular meaning; they should not be construed in the broadest sense possible to include meanings to which they would not be applied by most people. The court expressed agreement with the Supreme Court of Michigan as stated in *Kingsley v. American Central Life Ins. Co.*, 259 Mich. 53, 242 N. W. 836, that "the natural obvious meaning of the word 'poison'—that understood by people at large"—would not include "asphyxiation" from inhaling carbon monoxide gas. Most persons, continued the court, consider a poison as being a potion containing a deadly ingredient. Webster's New International Dictionary so defines it. On the other hand, Webster's definition of asphyxia does not mention poison. The judgment for the plaintiff was accordingly affirmed, with certain modifications.—*Clearer v. Central States Life Ins. Co.*, 142 S. W. (2d) 474 (Mo., 1940).

Workmen's Compensation Acts: Cancer Attributed to Trauma.—The deceased, an employee of the Macon County Coal Company, was struck by some dislodged rock, sustaining lacerations of his lip, chin and scalp, a fractured pelvis with upward and inward displacement and a rupture of the urethra at the bladder neck. He received periodic hospitalization and medical treatment for about nine months, when a blood count showed secondary anemia. Six days later a roentgenogram disclosed a cancer of the stomach; about three months later he died. Subsequently the petitioner, wife of the deceased, was granted an award by the industrial commission, but that award was reversed on appeal to the circuit court. The petitioner appealed by writ of error to the Supreme Court of Illinois.

The employer contended that the deceased's death was caused by preexisting cancer, but the petitioner insisted that the cancer was caused by the injury which her husband had received. A physician who testified for the employer admitted that the deceased died as a result of the cancer and that trauma is a cause of cancer. He then stated, however, that he had never seen a traumatic cancer of the stomach and concluded that the deceased did not have one. This opinion was based on the absence of any injury to the deceased in the vicinity of his stomach; the evidence showed, however, that there were bruises on the deceased's hip and abdomen after the accident. The experts who testified on behalf of the plaintiff definitely stated that there was a causal connection between the deceased's injuries and the cancer. One of them, in answer to a hypothetical question, said positively that the deceased's cancer was caused by the injuries he had received. The witness further stated that in his medical practice he had treated traumatic cancer and that, although he himself had seen no traumatic stomach cancers, medical opinion agrees that they do develop and that actual cases have been reported. Ruptures causing stomach cancers, he explained, result from trauma to the pelvic portion of the abdomen and they frequently occur in a section of the abdominal cavity not directly injured.

The Supreme Court admitted that it was difficult for lay persons to decide this question when the opinions of the medical experts were so conflicting, but it held that the evidence was sufficient to sustain the decision of the industrial commission. The deceased was shown to have been healthy prior to the accident and he grew progressively ill following it. He received severe injuries, "an admittedly recognized cause of cancer," in the region where his cancer was located. The Supreme Court therefore concluded that the evidence was competent to establish that the impaired health and the subsequent death were the result of the accidental injuries. The judgment appealed from was accordingly reversed and the award of the industrial commission confirmed.—*Macon County Coal Co. v. Industrial Commission*, 29 N. E. (2d) 87 (Ill., 1940).

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, N. J., June 8-12. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

Alabama, Medical Association of the State of, Montgomery, Apr. 21-23. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association for the Study of Allergy, Atlantic City, N. J., June 8-9. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.

American Association for the Study of Goiter, Atlanta, Ga., June 1-3. Dr. Thomas C. Davison, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

American Association for the Study of Neoplastic Diseases, Winston-Salem, N. C., April 23-25. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Association for the Surgery of Trauma, Boston, June 4-6. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Nashua St., Boston, Secretary.

American Broncho-Esophagological Association, Atlantic City, N. J., June 8-9. Dr. Paul H. Hollinger, 700 North Michigan Blvd., Chicago, Secretary.

American College of Chest Physicians, Atlantic City, N. J., June 6-8. Dr. Paul H. Hollinger, 500 North Dearborn St., Chicago, Secretary.

American College of Physicians, St. Paul, Apr. 20-24. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Dermatological Association, Hot Springs, Va., May 31-June 4. Dr. Harry R. Foerster, 208 East Wisconsin Ave., Milwaukee, Secretary.

American Federation for Clinical Research, Minneapolis, Apr. 20-21. Dr. Thomas M. Durant, 3401 North Broad St., Philadelphia, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 8-9. Dr. J. Arnold Bergen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Heart Association, Atlantic City, N. J., June 5-6. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Human Serum Association, Atlantic City, N. J., June 8. Dr. Maurice Hardgrove, 3321 North Maryland Ave., Milwaukee, Secretary.

American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otolological Society, Atlantic City, N. J., June 1-3. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Atlantic City, N. J., June 6-7. Dr. Ada Chree Reid, 102 East 22d St., New York, Secretary.

American Neurological Association, Chicago, June 4-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Baltimore, June 3-6. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.

American Otolological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Friesner, 101 East 73d St., New York, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Proctologic Society, Atlantic City, N. J., June 7. Dr. William H. Daniel, 1930 Wilshire Blvd., Los Angeles, Secretary.

American Psychiatric Association, Boston, May 18-22. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.

American Radium Society, Atlantic City, N. J., June 8-9. Dr. Axel N. Arneson, 4952 Maryland Ave., St. Louis, Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.

American Society of Clinical Pathologists, Philadelphia, June 5-7. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Therapeutic Society, Atlantic City, N. J., June 5-6. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, New York, June 1-4. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Association for the Study of Internal Secretions, Atlantic City, N. J., June 8-9. Dr. Henry H. Turner, 1200 North Walker St., Oklahoma City, Secretary.

Association of American Physicians, Atlantic City, N. J., May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, Middletown, June 3-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Georgia Medical Association of, Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 19-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.

Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.

Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Medical Library Association, New Orleans, May 7-9. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.

Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksdale, Secretary.

Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.

National Gastroenterological Association, New York, June 3-5. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.

Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 12-13. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, Apr. 21-23. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.

New York, Medical Society of the State of, New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.

New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina, Medical Society of the State of, Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.

North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.

Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Tulsa, April 22-24. Mr. R. H. Graham, 210 Plaza Court Bldg., Oklahoma City, Executive Secretary.

Pacific Coast Oto-Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.

Rhode Island Medical Society, Providence, June 3-4. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 2. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian P. Price, 105 West Cheves St., Florence, Secretary.

South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107½ Egan Avenue South, Madison, Secretary.

Texas, State Medical Association of, Houston, May 11-14. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Fourteenth Annual Meeting, Held in Chicago, Nov. 7 and 8, 1941

The President, DR. LAWRENCE D. THOMPSON,
St. Louis, in the Chair

(Concluded from page 1324)

Further Experimental and Clinical Studies on Gramicidin

DRS. WALLACE E. HERRELL and DOROTHY HEILMAN, Rochester, Minn.: The bacteriostatic effect of gramicidin and tyrocidine, the two substances obtained from a soil bacillus, has been studied by the tissue culture technic. Small amounts of gramicidin (0.0005 to 0.0025 mg.) inhibited the growth of all strains of pneumococci tested. Slightly larger amounts (0.005 to 0.01 mg.) were required to inhibit strains of hemolytic streptococci, whereas still larger amounts were necessary to prevent growth of *Streptococcus faecalis*, *Streptococcus salivarius* and the staphylococcus. Tyrocidine is much less effective than gramicidin against all of these organisms. We observed earlier that gramicidin was extremely hemolytic even in small amounts. Dubos reported that small amounts of dextrose would prevent the hemolysis produced by gramicidin. Subsequent studies in our laboratory reveal that after twenty-four hours of incubation 1 microgram per cubic centimeter of gramicidin will cause complete hemolysis of 1 per cent suspension of sheep erythrocytes in the presence of 184 mg. of dextrose per hundred cubic centimeters. No hemolysis was observed in preparations containing 1 microgram of gramicidin per cubic centimeter in the presence of 396 mg. of dextrose per hundred cubic centimeters after twenty-four hours of incubation. However, amounts of dextrose as high as 1,960 mg. per hundred cubic centimeters did not prevent hemolysis from occurring in twenty-four hours in preparations containing 100 micrograms of gramicidin per cubic

centimeter. The amounts, therefore, of dextrose necessary to prevent hemolysis are entirely out of the physiologic range.

Studies on cytotoxicity have been made with an amount of gramicidin (5 micrograms per cubic centimeter of tissue culture mediums) which is bacteriostatic for pneumococci and hemolytic streptococci. This amount does not appear to inhibit the migration of lymphocytes or macrophages or to inhibit the normal growth of fibroblasts. Since this amount of gramicidin is actively hemolytic for erythrocytes suspended in the same medium, it appears that the hemolytic effect of gramicidin accounts for a good deal of its toxicity for animals.

For clinical purposes the crude substance tyrothricin has been used. Because of the apparent toxicity, it has not been administered by mouth or intravenously. The substance has been applied locally and has been instilled into body cavities, including the paranasal sinuses, the urinary bladder and the pleural cavity. In general, lesions infected with hemolytic streptococci and *Str. faecalis* have responded more favorably than conditions in which staphylococci were present. This parallels the results noted in the bacteriostatic studies. The preparation used was a solution containing 400 micrograms of tyrothricin per cubic centimeter. Tyrothricin has been used in treatment in 50 clinical cases. In 14, sinusitis was present. In 6 cases of cystitis and 4 of empyema, tyrothricin was used in treatment. The remainder of the cases formed a miscellaneous group including cases of infected postoperative wounds, infectious dermatoses and stasis ulcers. The response was somewhat irregular, but for the purpose of analysis the results fall into three general groups: good, fair and poor. The results could be considered good in less than half (43 per cent) of the cases. Clinical results could be considered no more than fair or temporary in a fourth (25 per cent) of the group. Failures or poor results were observed in a third (32 per cent) of the cases.

Use of Sulfaguanidine in Nonspecific Ulcerative Colitis and Other Infections of the Bowel

DR. JOSEPH B. KIRSNER, ENID C. ROBANICHE, PH.D., and DR. WALTER L. PALMER, Chicago: Sulfaguanidine was found by Marshall and his co-workers to be fairly soluble in water and poorly absorbed from the bowel and to reduce the number of coliform organisms in the feces of mice. Large quantities of this drug were given by us to a series of 20 patients, including 12 with nonspecific ulcerative colitis, 2 with acute bacillary dysentery, 2 with lymphogranuloma venereum of the bowel and 4 with miscellaneous infections of the intestinal tract.

Sulfaguanidine, while not as readily absorbed from the bowel as other sulfonamide derivatives, was, nevertheless, absorbed to some extent; when 10 to 15 Gm. of the drug was given daily the level of total sulfaguanidine in the blood reached 10 mg. per hundred cubic centimeters. The bacterial count of the feces usually was decreased considerably and the flora transformed from one predominantly coliform in type to one composed entirely of gram-positive organisms. The bacterial content of the feces increased rapidly when chemotherapy was discontinued.

Toxic reactions occurred in 4 cases in this series and consisted of localized or generalized cutaneous lesions. Evidence of a toxic effect on the bone marrow was noted in 1 instance. There was usually a decrease in the leukocyte count, and occasionally a diminution in the red cell level occurred. Varying quantities of crystalline *N*-acetylsulfanilylguanidine were found in the urine in cases in which it was sought for.

Sulfaguanidine therapy appears to be of value for acute bacillary dysentery but not for paratyphoid B infection. It apparently has no advantage over other sulfonamide derivatives in the treatment of lymphogranuloma venereum. The continued use of sulfaguanidine over a long period may be beneficial in the treatment of chronic nonspecific ulcerative colitis.

With regard to bacillary dysentery, we have been much interested in the susceptibility of *Shigella paradysenteriae* to these sulfonamide drugs in vitro. We have observed that all cultures tested by us grew out within forty-eight hours in a medium containing 200 mg. of sulfaguanidine per hundred cubic centimeters. However, with sodium sulfathiazole organisms of the Flexner group require about twenty days to grow in a medium with a concentration of 20 to 30 mg. per hundred cubic centi-

mers, but those of the Sonne group are less susceptible to sodium sulfathiazole. They grow out normally in twenty-four hours in a medium containing 1 mg. per hundred cubic centimeters of sodium sulfathiazole, in one week in one containing 80 mg. and in two weeks in one containing 150 mg. These observations would indicate that the bacteria of the *Shigella* group are less susceptible in vitro to sulfaguanidine than to sulfathiazole.

DISCUSSION

DR. M. L. COOPER, Cincinnati: I raised a question concerning the high levels of the drug in the blood which Dr. Palmer obtained and the possible influence of ulcerations of the intestinal tract on such high levels. Marshall's studies indicated that the drug is absorbed only slightly from the intestinal tract, produces low levels in the blood and builds up high intestinal drug levels; hence he thought it would be a good therapeutic agent in bacillary dysentery. During the past summer my associates and I observed 1 child with ulcerative colitis. At the time this child was admitted to the hospital he had severe bloody diarrhea; the diagnosis was dysentery, and he was given sulfaguanidine. The following day when we obtained a report regarding the level of the drug in the blood we were surprised to find that it was 10 mg. per hundred cubic centimeters. We had not been obtaining levels in children above 2 mg. The next day the level in the blood was 11.7 mg. Therapy with the drug was then stopped. Further study revealed that the patient had ulcerative colitis. Later the child was again given sulfaguanidine, and high levels in the blood were again obtained. The question then arose regarding the influence of ulcers of the intestinal tract on the absorption of this drug. It seemed likely that the high levels obtained in this child might be due to increased absorption through the ulcerative processes. If ulcerations facilitate greater absorption of sulfaguanidine, it may be that extraordinarily high levels in the blood should lead one to think of the possibility of an ulceration of the intestinal tract when an ulceration may not otherwise be suspected.

DR. H. MARVIN POLLARD, Chicago: I should like to ask Dr. Kirsner if in severe ulcerative colitis the patients have had improvement, improvement either in temperature or in the number of stools, and if he noticed an increase in the number of stools in those who did not show improvement.

DR. JOSEPH B. KIRSNER, Chicago: The mechanism responsible for the high levels of the drug in the blood is not apparent. Dr. Cooper's explanation seems plausible. We have attempted to be cautious in the interpretation of our results in the treatment of ulcerative colitis because it is a disease which is characterized by spontaneous remissions not attributable to specific therapy. We thought that, in the 4 cases in which it was considered that improvement occurred, the drug did have something to do with the improvement. The clinical change was characterized by a return of the temperature to normal and by a decrease in the number of stools. The stools became better formed, and there was also improvement in the proctoscopic appearance of the rectal mucosa. In cases in which improvement did not occur during sulfaguanidine therapy we did not observe an increase in the number of stools.

Combining Drug to Stimulate the Human Colon

HARRY F. ADLER, PH.D., and DRs. A. J. ATKINSON and A. C. IVY, Chicago: Four adults with colostomy served as subjects in experiments conducted to find combinations of stimulating drugs which would supplement one another or act synergistically to stimulate the colon. Prostigmine or physostigmine combined with solution of posterior pituitary have supplementary action. Prostigmine and ergotamine act synergistically. The simultaneous injection of small amounts of solution of posterior pituitary, prostigmine and ergotamine resulted in strong propulsive and nonpropulsive colon motility with repeated evacuations of gas and material. Most important is the fact that this strong action on the colon was not accompanied by side effects.

DISCUSSION

DR. LOUIS N. KATZ, Chicago: Did ergotamine increase the effectiveness of propulsion of solution of posterior pituitary and prostigmine? A glance at the tables presented fails to demonstrate that this was so.

DR. ARTHUR J. ATKINSON, Chicago: I am sorry that I did not emphasize that point. Ergotamine did increase the effect of solution of posterior pituitary and prostigmine. Ergotamine of itself did nothing. I did not point out that the effects we obtained with ergotamine and prostigmine were achieved with one-half the dose that we used in the experiment with prostigmine alone. I have not said anything about the clinical application, and it remains to be seen whether combinations of these drugs clinically will produce propulsive motility as it is seen in the normal colon. We are using patients with a normal colon and not those with adynamic ileus or with megacolon.

Treatment of Hepatic Cirrhosis with Choline Chloride and Diet Low in Fat and Cholesterol

DRS. G. O. BROWN and R. O. MUETHER, St. Louis: In experiments on the production of atherosclerosis in rabbits by means of diets high in cholesterol the development of a fatty liver was uniformly observed, and in prolonged experiments a number of animals showed hepatic cirrhosis. Administration of choline decreased the severity of fatty hepatic changes. We observed the experiments of Griffith on the effects of diets low in choline. In rats subjected to such diets a fatty liver develops. Administration of choline will prevent such fatty changes, and administration of the amino acid methionine will give a similar protective action. Addition of cholesterol to low choline diets appears to increase the toxic effects.

On these bases we have been treating patients with hepatic cirrhosis for more than two years by the administration of choline chloride in a dose of 1 Gm. daily and by giving diets low in animal fats and cholesterol. The daily intake of fat was limited to approximately 70 Gm. The protein content of the diet was increased to as much as 100 Gm. daily in cases in which the plasma proteins were depleted. This protein was largely supplied as skimmed milk since casein has a high methionine content. The remainder of the caloric requirement was supplied by carbohydrate. Fish liver oil concentrates were added as supplementary sources of vitamins A and D.

A number of patients with portal cirrhosis of the liver have responded well to this method of treatment. Elimination of ascites, decrease in the size of the liver, increase in plasma proteins with return of the albumin-globulin ratio to a more normal level, improvement in anemia, increased bromsulphalein elimination, raised hippuric acid synthesis and decrease in blood bilirubin and blood cholesterol were among the evidences of clinical improvement secured. Persistence in treatment is necessary. One patient, who had ascites for eighteen months requiring eighty-nine paracenteses, after fourteen months of treatment has remained completely free from ascites for more than ten months. While we have no doubt that the diet alone is beneficial, 1 patient was treated by the use of the diet, diuretics and plasma transfusions for about six months without much improvement. Continuation of the diet with the addition of choline resulted in disappearance of the ascites after this had been present over a year. It has not recurred in the last four months.

DISCUSSION

DR. WALTER L. PALMER, Chicago: The interesting report presented illustrates the importance of trying to do something for patients with cirrhosis of the liver and ascites. The clinical and pathologic evidence that alcohol plays a primary role in cirrhosis of the liver is becoming more convincing. It is difficult to evaluate such factors as choline and cholesterol. We have had in the past year one experience similar to that reported by Dr. Brown, in a patient with cirrhosis and ascites who regained a satisfactory state of health after the institution of a high carbohydrate-low fat diet. In this case, because of certain recent experiments we used brewers' yeast in large quantities. I wonder if Dr. Brown has tried yeast. The question arises whether choline or yeast is of any more value than diet.

DR. HENRY T. RICKETTS, Chicago: Dr. Brown has shown that he can influence ascites by this method. I am not sure, however, that he has shown he can influence cirrhosis, except possibly in the 1 case in which the liver decreased in size. It is difficult to conceive how the administration of choline or a low fat diet could alter the process of fibrosis once it has become firmly established. It is well known that fatty infiltration can

be prevented by appropriate means, but how a nodular and fibrotic liver can be reduced in size is a question which needs explanation.

DR. G. O. BROWN, St. Louis: In these cases we have not used yeast in large quantities. In the second case we tried vitamin B concentrates in large quantities for several months. During this period there was no improvement. I admit that the question whether equally good results might be secured by treatment with diet alone is unsettled. We have, however, handled several patients with diet alone, some of whom have improved. It is my impression that these patients as a group have not done as well as those receiving choline also. That remains for future demonstration. Regarding diet, it may be recalled that the second patient was treated with diet alone for many months without improvement, but he seemed to respond when choline was added. The third patient was treated with both choline and diet for several months before there was improvement. I do not think the portion of the liver that has undergone advanced fibrotic changes will be influenced by such treatment as we have used. If the cirrhosis has not gone so far and some portions of healthy tissue remain, it is known that the liver has tremendous regenerative activity. Given favorable conditions, in time the healthy liver tissue may regenerate and some improvement in hepatic function will occur. Of the cases studied, in 2 there was a decrease in the size of the liver. There was also definite improvement in the jaundice in 1. Ascites disappeared in all 4 cases reported.

Relationship of Steroids of Adrenal Cortex to Shock

DR. S. C. FREED, I. SHLESSER and E. LINDNER, Chicago: The adrenal cortex is known to protect the animal against the development of secondary shock after trauma, infection or the administration of pharmacologic agents. Adrenal cortex steroid therapy has been suggested for use in the treatment of these conditions. There is evidence that the response of the peripheral vascular system is involved in this relationship. For this reason adrenal cortex preparations were studied for their effect on capillary permeability by Menkin's "leukotaxine" method. Crystalline corticosterone and commercial adrenal cortex extract were found to prevent the increase in skin capillary permeability which follows leukotaxine administration. Crystalline desoxycorticosterone was unable to do so. It is of considerable interest that compound E, which closely resembles corticosterone both physiologically and chemically, is unable to neutralize the effect of leukotaxine.

These experimental results may explain the qualitative differences in the effects of the various adrenal cortex preparations in the treatment of shock. Thus, desoxycorticosterone is capable of combating the shock due to muscle trauma, water intoxication and intraperitoneal injections of dextrose solution but not that following intestinal manipulation, while corticosterone is of benefit in treating the shock following intestinal manipulation. This indicates that a toxic factor similar to leukotaxine may be elaborated by trauma to the intestine resulting in an increased capillary permeability, while the other forms of shock may be due principally to extreme shifts of body fluids unrelated to capillary changes.

DISCUSSION

DR. EDWARD H. RYNEARSON, Rochester, Minn.: In view of the publicity being given the use of adrenal cortex extract and desoxycorticosterone acetate in the prevention and treatment of shock it is more than ever imperative that studies such as the one presented should be carried out. Keating, Power and I have presented our studies on the use of desoxycorticosterone acetate in the prevention of surgical shock. Observing its effect in women about to undergo the radical removal of breasts, we were unable to detect any clinical or laboratory changes in patients receiving this substance as compared with normal controls. This study was not performed with adrenal cortex extract, and it was not tried with any operations other than radical mastectomy.

DR. LOUIS N. KATZ, Chicago: Drs. Killian and Perlow, Mr. Asher and I have been using desoxycorticosterone in another type of experiment. We have found that occlusion of the main veins to the limb will lead to death of an animal in four to twelve hours with the symptoms of shock. We have

demonstrated that this shocklike state is due to the accumulation of fluid in the animal's leg. We have found, in as yet unpublished results, that the preliminary use of desoxycorticosterone tends to prevent death and tends to alleviate shock in such animals. It seems from our results, therefore, that desoxycorticosterone is of value in the treatment of the form of shock due to loss of plasma fluids, and its use would be justified clinically as a prophylactic agent. The demonstration of its use by clinical investigation is unsatisfactory, since one cannot predict which patient will have shock. Furthermore, our animal experiments suggest that it cannot be used effectively after shock has appeared. Not all forms of shock may be due to the same mechanism, so that desoxycorticosterone therapy may not be effective in all. I am sure that as knowledge grows the rationale for use of desoxycorticosterone as well as of other suggested therapeutic agents in shock will gradually become clearer.

DR. S. C. FREED, Chicago: On a theoretical basis the use of desoxycorticosterone in the treatment of shock would be appropriate when there is fluid loss unrelated to any factor which renders the capillaries more permeable. When such factors exist, as after injury to the intestine, then either natural cortex extract or corticosterone, the substance in the extract which is probably responsible for the reduction in permeability of the capillaries, is indicated.

Treatment of Edema with an Oral Mercurial Diuretic

DR. JOSEPH F. BORG, St. Paul: Thirty-nine patients with edema were given orally tablets of a complex mercury compound, sodium salicyllallylamide-o-acetate, with theophylline (salyrgan-theophylline tablets) to determine their diuretic effect. Each tablet contained 0.08 Gm. of salyrgan (containing 0.031 Gm. of mercury) and 0.04 Gm. of theophylline. The patients included 19 men and 20 women from 40 to 80 years of age. Maintenance doses of digitalis were given to patients with heart disease, and 6 Gm. of ammonium nitrate was given daily to all patients. All patients were maintaining stationary weight levels before the therapy was started, and results were judged by the water loss shown by daily weight determinations. Varying methods of administration revealed that best results, with the least toxicity, were obtained with divided daily doses, usually six tablets daily. Observations made over periods as long as sixteen months revealed excellent results in 28 patients, fair in 5 patients and none in 6 patients. Men and women responded equally well. Varying toxic manifestations (nausea, diarrhea, weakness and abdominal pain) occurred in 15 patients but were severe enough to necessitate the discontinuance of therapy in only 3 patients. No renal or hemic complications were noted. The 6 failures reported occurred among the patients treated earlier and 5 were probably due to an inadequate dose. Only 1 patient failed to respond when an apparently adequate trial was given.

DISCUSSION

DR. WILLIAM H. BUNN, Youngstown, Ohio: There are several reasons why this might be a useful remedy. I shall discuss only one. It is often difficult to find a vein suitable for intravenous injection in an obese or an edematous person. Formerly rectal suppositories of the mercurial diuretic were used with good effect, but this practice has had to be discontinued because of toxic effects. I have used the preparation for 16 patients with only one severe reaction (hematemesis); there were several other milder evidences of intolerance. It would seem worth while to continue this experiment, for most patients have a satisfactory diuretic effect.

Diagnostic Value of Certain Studies of Renal Function in Cases of Addison's Disease

DRS. E. J. KEPLER and F. J. ROBINSON and M. H. POWER, PH.D., Rochester, Minn.: Two comparatively simple diagnostic procedures based on renal function eliminate the necessity of salt deprivation in patients suspected of having Addison's disease. The two tests are conducted in the following manner: The day before the test the patient eats his usual three meals but omits extra salt. After 6 p. m. he does not eat or drink. At 10:30 p. m. he voids and discards the urine. All urine

voided from 10:30 p. m. until and including 7:30 a. m. is collected, measured and saved for chemical analysis if this proves necessary. At 8:30 a. m. the patient voids again (if possible) and discards the urine. Immediately thereafter he is given 20 cc. of water per kilogram of body weight, or 9 cc. per pound, in the course of forty-five minutes. He is asked to void at 9:30, 10:30 and 11:30 a. m. and 12:30 p. m. Each of the specimens is measured. At 11:30 a. m. or 12:30 p. m. (the exact time is inconsequential) blood is drawn under oil for chemical analysis if the necessity for such studies appears likely, as by this time the results of this first procedure usually will be apparent.

The first procedure is concluded by comparing the volume of urine voided during the night with the volume of the largest single hourly specimen voided between 8:30 a. m. and 12:30 p. m.; the second procedure, by analyzing the urine voided during the night and the blood for the concentrations of urea and chloride. A ratio is calculated from the values obtained in these four determinations.

From a study of 90 patients (40 of whom were proved by salt deprivation and by the Cutler, Power and Wilder procedure to have Addison's disease) it was ascertained that if the volume of urine which was voided during the night was less than the volume of urine voided at any one hour during the morning the patient did not have Addison's disease. If, on the other hand, the volume of urine voided during the night was greater than the volume voided at any one hour during the morning the patient might or might not have Addison's disease, and the chemical analyses which constitute the second procedure were necessary. Under the latter circumstances the following ratio is calculated from the results of the four chemical determinations (the volume of day urine being the largest of the hourly specimens voided during the day and the volume of night urine being the entire amount voided between 10:30 p. m. and 7:30 a. m.):

$$A = \frac{\text{urea in urine (mg. per 100 cc.)}}{\text{urea in plasma (mg. per 100 cc.)}} \times \frac{\text{chloride in plasma (mg. per 100 cc.)}}{\text{chloride in urine (mg. per 100 cc.)}} \times \frac{\text{volume of day urine (cc.)}}{\text{volume of night urine (cc.)}}$$

In nearly all instances in which the value for *A* did not exceed 25 the patient was found to have Addison's disease. Values for *A* of more than 30 indicated the absence of Addison's disease. The only exceptions encountered occurred in cases of nephritis. In conjunction with clinical evidence, the procedure proved to be decisively diagnostic in cases in which the presence of Addison's disease was proved by other methods.

DISCUSSION

DR. PAUL STARR, Chicago: Dr. Kepler and his associates should be congratulated for working out so simple a diagnostic test. Many potent endocrine substances are on the market, and physicians are urged to use them, with the result that a great deal of therapy is carried out which is dangerous to the patient. I am grateful for any procedure which will definitely indicate the need for therapy and which will also definitely show the conditions not requiring treatment.

The Bronchial Factor in Pulmonary Embolism

DRS. JOSEPH H. JESSER and GEZA DE TAKATS, Chicago: The bronchial tree of the dog was visualized, and the effect of pulmonary embolism on the pattern of the bronchial tree was studied. It was found that powerful bronchoconstriction was produced during embolism, which could be abolished by bilateral vagal section and often by sufficient doses of atropine. Mechanical obstruction to the trachea failed to produce bronchial spasm. Papaverine failed to protect the bronchial tree from this reflex spasm in most instances. These experiments emphasize the existence of widespread autonomic reflexes which occur within the distribution of vagal fibers. The suppression of these reflexes decreases the morbidity and mortality from pulmonary embolism.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore 12:1-72 (Jan.) 1942

- *Benign and Malignant Stromal Endometriosis. T. D. Robertson, W. C. Hunter, Portland, Ore.; C. P. Larson, Tacoma, Wash., and G. A. C. Snyder, Spokane, Wash.—p. 1.
Sputum Studies in Pneumonia: Effect of Sulfapyridine and Sulfabiazole. A. W. Frisch, with technical assistance of Miriam F. Frisch, Detroit.—p. 16.
Relation Between Liver and Thyroid Gland: I. Blood Iodine as Indicator of Liver Function. A. Cohn and S. E. Feldman, San Francisco.—p. 27.
Morphologic Variations in Adenocarcinoma of Fundus of Uterus, with Reference to Secretory Activity and Clinical Interpretations. N. W. Elton, Buffalo.—p. 32.
New Standard Slide Test Antigen (Water Purified). B. S. Kline, Cleveland.—p. 48.
Adventitious Substances Removed from Slide Test Antigen by Extraction with Water. Miriam S. Levy, Cleveland.—p. 62.
Drainage of Coronary Sinus into Left Auricle: Report of Rare Congenital Cardiac Anomaly. L. E. Fieldstein and J. Pick, New York.—p. 66.

Stromal Endometriosis.—Robertson and his associates discuss the nature of benign and malignant stromal endometriosis as they observed it in 6 instances. The malignant form is interpreted as a low grade sarcoma. Uterine adenomyosis and stromal endometriosis are variants of the same process originating by extrusion of the endometrium into the myometrium. A case is cited in proof of this assertion. Adenomyosis is the more frequent manifestation. After the menopause, stromal endometriosis may either continue to grow or, as in 1 of their patients, regress. This is unlike glandular endometriosis, which always becomes inactive when ovarian function ceases. Microscopically, stromal endometriosis presents a characteristic and readily identifiable picture.

American J. Digestive Diseases, Fort Wayne, Ind. 9:1-48 (Jan.) 1942

- Clinical and Laboratory Study of Plasma Lipids in Obstructive Jaundice and Several Types of Hepatic Disease. C. A. Jones, Philadelphia.—p. 1.
Comparative Evaluation of Newer Liver Function Tests: (Comparison of Intravenous Hippuric Acid Test, Cephalin-Cholesterol Flocculation Test, Colloidal Gold Test and Serial Bromosulphalein Test with Oral Hippuric Acid Test and Rosenthal Bromsulphalein Test). J. G. Mateer, J. I. Baltz, D. F. Marion and R. A. Hoffands, with assistance of Elizabeth M. Yagle, Detroit.—p. 13.
*Genesis of Pellagra, Pernicious Anemia and Sprue. S. Harris and S. Harris Jr., Birmingham, Ala.—p. 29.
Study of Sphincter of Oddi in the Human and the Dog. H. Necheles and D. D. Kozell, Chicago.—p. 36.
Effect of Food on Sphincter of Oddi in Human Subjects. G. S. Bergh, Minneapolis.—p. 40.
Porphyrinuria in Aged. H. A. Rafsky and B. Newman, New York.—p. 43.
Lymphosarcoma Causing Obstruction at Duodenojejunal Angle: Report of Case. H. J. Svien and A. B. Rivers, Rochester, Minn.—p. 45.

Pellagra, Pernicious Anemia and Sprue.—The HARRISES believe that pernicious anemia, pellagra and sprue are three separate and distinct diseases despite the fact that some symptoms are common to all three and that use of liver or liver extract and a high protein, low carbohydrate diet rich in vitamins is effective. Pernicious anemia differs only in that liver or liver extract therapy must be continued for the rest of the patient's life. Hepatic insufficiency appears to be a factor in the genesis of pellagra, pernicious anemia and sprue. The liver may secrete hormones. Research workers who are prepared to make biologic laboratory investigations may prove or disprove (1) that hepatic insufficiency is the underlying factor in

pernicious anemia and (2) that hormones secreted by the liver may be factors in erythrocytolysis or hemopoiesis. Identical pathologic changes are found in the liver in pernicious anemia and pellagra. It seems possible that hepatic insufficiency by inhibiting the secretion of an endocrine substance which controls erythrocytolysis or hemopoiesis may cause pernicious anemia and that a deficiency of an intrinsic hepatic factor may prevent the utilization or the storage of nicotinic acid, the pellagra preventive factor in vitamin B. Greenspon and Morris suggest a gastric hormone as the intrinsic factor in preventing pernicious anemia. The authors cite instances in which pellagra and pernicious anemia, sprue and pernicious anemia or pellagra, sprue and pernicious anemia coexisted. This suggests common etiologic factors. The frequency of intestinal parasites in anemic patients with pellagra, pernicious anemia or sprue suggests that the intestinal toxemia and hepatic insufficiency may be etiologic factors in some cases.

American J. Orthodontics and Oral Surgery, St. Louis 27:599-666 Orthodontics (Nov.) 1941. Partial Index 599-666 Oral Surgery Orthodontics

- Psychologic Effects of Malocclusion of Teeth. M. B. Walker, Norfolk, Va.—p. 599.
Further Investigations of Bone Changes Resulting from Experimental Orthodontic Treatment. C. Breitner, New York.—p. 605.

Oral Surgery

- Incidence of Supernumerary and Congenitally Missing Lateral Incisor Teeth in Eighty-One Cases of Harelip and Cleft Palate. J. A. Millhon and E. C. Stafne, Rochester, Minn.—p. 599.
Shock, Respiratory and Cardiac Failure. L. B. Ellis, Boston.—p. 618.
Local Anesthetics and Their Use in Patients Suffering from Endocrine Disorders. P. Adler, Makó, Hungary.—p. 620.
*Coagulation Globulin in Hemorrhages After Extraction of Teeth, Especially in Hemophilic Patients. S. van Creveld and R. Hamer, Amsterdam, Netherlands.—p. 628.

Coagulation Globulin for Postextraction Hemorrhage.—Van Creveld and Hamer controlled in 6 patients hemorrhage following the extraction of teeth with a powder of coagulation globulin prepared from cow's plasma. Four of the patients had hemophilia, 1 had a history of repeated hemorrhages after tooth extraction and 1 had a moderately prolonged coagulation time, which explained a severe hemorrhage after a former extraction. Coagulation globulin powder, which in the normal blood may be the carrier of the coagulation promoting factor, has a definite hemostyptic activity. When a patient with hemophilia is to have an extraction he should be hospitalized. The wound after extraction should be sprinkled with coagulation globulin and a tampon slightly moistened with saline solution applied. This is to be thickly covered with coagulation globulin powder. The tampon should be pressed on the wound by a finger for four to six minutes. It should be renewed every twenty-four hours after the wound has been cleansed. The repeated application of the powder may cause hypersensitivity. Although the risk of this complication is small, the authors intend in the future to use a coagulation globulin powder prepared from human plasma or from the human placenta.

27:667-744 Orthodontics (Dec.) 1941. Partial Index 667-746 Oral Surgery Orthodontics

- *Effects of Congenital Syphilis on Teeth and Associated Structures in Children. W. D. Johnston, B. G. Anderson and P. F. McAlenney, New Haven, Conn.—p. 667.
First Aid Appliance for Treatment of Fractured Jaw. T. W. Sorrels, Oklahoma City.—p. 714.

Oral Surgery

- Incisive Canal Cysts. M. M. Cohen, Boston.—p. 670.
Gas Bacillus Infections, Burns and Tetanus. J. H. Burnett, Boston.—p. 698.
General Anesthesia for Oral Operations. S. C. Wiggin, Boston.—p. 704.
Secondary Repair of Cleft Lips and Their Nasal Deformities. J. B. Brown and F. McDowell, St. Louis.—p. 712.

Effects of Congenital Syphilis on Teeth.—Johnston and his associates observed the effects of congenital syphilis on the teeth and oral structures of children by comparing 39 children aged 1 to 15 years who had known congenital or acquired syphilis with a positive Wassermann reaction. The medical

histories of 29 of the mothers (all with positive Wassermann and Kahn reactions) of these children were available. Histories of the children were studied with respect to lesions of teeth, eyes, ears, nose, hair and nails. In examining the oral cavity, particular attention was paid to stigmas which might be of syphilitic origin, such as malocclusion and dental caries. Gross examination of the children revealed that 6 had a "saddle nose," 1 fixed pupils and 2 impaired hearing. No intraoral pathologic lesions of the soft tissues were observed. Direct measurement of roentgenograms of the first and second permanent molars disclosed that the second molar of 20 was larger than the first molar and that the first molar of 5 was larger than the second molar. The incisors of 1 child were the same size, while those of 10 could not be compared because of loss of the teeth. Serially cut sections, stained with Delafield's hematoxylin and alcoholic eosin, of eleven teeth from the children revealed no abnormalities attributable to congenital syphilis. The most characteristic dental abnormalities seen were (1) an apparent lack of development in the anterior region, particularly in the maxilla, (2) involvement of the four incisors, two cuspids and the two first molars of the permanent teeth, (3) a huddled appearance of the mamelons, marginal ridges and cusps of the affected teeth and (4) an undersized, malformed appearance of the crowns of the teeth. Eight of the children had a peculiar type of "open bite." The so-called Hutchinson triad (deafness referable to the acoustic nerve, interstitial keratitis and defect of the first maxillary permanent incisor) was not observed.

American Journal of Public Health, New York

31:1243-1344 (Dec.) 1941

- For Whom the Bell Tolls. A. Wolman, Baltimore.—p. 1243.
Four Years of Contraception as Public Health Service in North Carolina. G. M. Cooper, Raleigh, N. C.; Frances Roberta Pratt and Margaret Jarman Hagood.—p. 1248.
War and Health in Britain. W. Jameson, London, England.—p. 1253.
Nutrition in Relation to Pregnancy and Lactation. J. Ernestine Becker, H. J. Bickerstaff and N. J. Eastman, Baltimore.—p. 1263.
What Is Happening to the Social Status of the Last Ten Years? Mary Van Kleeck, New York.—p. 1271.
Recent Studies in Influenza. F. L. Horsfall Jr., New York.—p. 1275.
Diagnosis of Epidemic Encephalitis by Complement Fixation Tests. J. Casals, New York.—p. 1281.
Sanitary Engineering Activities of Sanitary Corps, United States Army. W. A. Hardenbergh, Washington, D. C.—p. 1285.
Two Years' Experience in Nutrition Program for National Defense. F. F. Tisdall, Toronto, Canada.—p. 1289.
Public Health Nursing in National Defense. Katharine Tucker, Philadelphia.—p. 1293.
Immunologic Reactions in Rickettsial Diseases, with Special Reference to Time of Appearance of Antibodies. Florence Fitzpatrick and Betty Lee Hampill, Glenolden, Pa.—p. 1301.

American Journal of Tropical Medicine, Baltimore

22:1-120 (Jan.) 1942

- Florence Nightingale and Tropical and Military Medicine. T. T. Mackie, New York.—p. 1.
The Known and the Unknown in Plague. K. F. Meyer, San Francisco.—p. 9.
Venomous Snakes, Some Central American Records, Incidence of Snake Bite Accidents. H. C. Clark, Panama, Republic of Panama.—p. 37.
Malaria Reconnaissance of Province of Pinar Del Rio in Cuba. H. P. Carr and J. Fernandez Melendez, Havana, Cuba.—p. 51.
Malaria Reconnaissance of Province of Havana in Cuba. H. P. Carr, J. Fernandez Melendez, A. Ros and A. Fernandez Melendez, Havana, Cuba.—p. 63.
Varying Infectiousness of Different Patients Infected with Vivax Malaria. M. F. Boyd, Tallahassee, Fla.—p. 73.
Anopheles (Kerteszia) Bellator Dyar and Knab as Vector of Malaria in Trinidad, British West Indies. L. E. Rozeboom and R. L. Laird, Baltimore.—p. 83.
Prevalence of Amebiasis in Western Hemisphere. E. C. Faust, New Orleans.—p. 93.
Results of Protozoologic Survey of Food Handlers at Professional School in Philadelphia. D. H. Wenrich and J. H. Arnett, Philadelphia.—p. 107.

Protozoologic Survey of Food Handlers.—Wenrich and Arnett state that seven annual examinations of 190 food handlers at a professional school in Philadelphia revealed that the incidence was higher for the employee than for the student group, on first examination for Blastocystis, total protozoa, Endolimax, Endameba coli, Dientameba, Chilomastix and Enteromonas. The

1,060 students had an incidence of 10.7 per cent for Endameba histolytica as compared with 8 per cent for the employees after one examination. The incidence from an average of three and two-tenths examinations for each employee was considerably higher than that for the first examination in respect to most of the intestinal protozoa. Of the six infections with Endameba histolytica detected in the employee group, four were found at the first examination, one at the fourth and one at the fifth. All of the fifteen infections with this species discovered in the students were found at the first examination. Carriers of Endameba histolytica had no more gastrointestinal symptoms than the others.

Archives of Dermatology and Syphilology, Chicago

45:259-454 (Feb.) 1942

- Verruca Plana and Epithelial Nevus: Including Study of Epidermodysplasia Verruciformis. M. Watsman, Chicago, and H. Montgomery, Rochester, Minn.—p. 259.
Pseudoxanthoma Elasticum. L. de Sa Penella and J. Esteves, Lisbon, Portugal.—p. 283.
Nutritional Dermatoses in Rat: V. Signs and Symptoms Resulting from Diet Containing Unheated Dried Egg White as Source of Protein. M. Sullivan and Jane Nicholls, Baltimore.—p. 295.
Fibrous Nodules of Skin. S. E. Sweetzer and L. H. Winer, Minneapolis.—p. 315.
Electrosurgical Removal of Plantar Warts. F. L. Karp and S. B. Frank, New York.—p. 328.
Erythema Elevatum Diutinum. Report of Case with Histologic and Bacteriologic Studies. M. F. Engman Jr., St. Louis; R. O. Pinf, San Jose, Calif., and Zola K. Cooper, St. Louis.—p. 334.
Sclerema Neonatorum. Report of Case with Autopsy Observations. N. E. Reich, Brooklyn.—p. 342.
*Extensive Alopecia Areata of Dental Origin. Evidence That Isolated Areas of Alopecia May Be Due to Ipsilateral Foci of Infection. J. D. Grace, Ann Arbor, Mich.—p. 349.
Eruption Due to Sulfamylguanidine (Sulfaguanidine). N. P. Ringelmann, Cincinnati.—p. 353.
*Testosterone Propionate in Treatment of Male Postclimacteric Dermatoses. L. Hollander and H. R. Vogel, Pittsburgh.—p. 356.
Dermatologic Aspects of Roentgen Ray Field Distribution. J. E. Ginsberg, Chicago, and R. S. Landauer, Highland Park, Ill.—p. 364.
Job's Illness—Pellagra. C. J. Brim, New York.—p. 371.
*Chemical Evaluation of Superfatted Soap. R. L. Kile, Cincinnati.—p. 377.

Alopecia Areata of Dental Origin.—Complete regrowth of hair is reported by Grace in a case of extensive alopecia areata of three years' duration after several teeth, which were evidently not infected, had been extracted. The teeth contained large fillings of silver amalgam. All but two of the extracted teeth showed evidence of absorption of the filling material. The case demonstrates that improperly filled teeth may be the cause of alopecia areata.

Postclimacteric Dermatoses of Men.—Hollander and Vogel observed the therapeutic effect of the percutaneous use of androgen in the dermatoses of 8 men about and after the climacteric period. The results were most satisfactory. A preparation made from synthetic testosterone propionate was rubbed in over unaffected surfaces of the skin. The use of this substance for the treatment of presenile and senile dermatitis of men appears rational, as the cutaneous lesions in the post-climacteric period appear to be a definite entity. In some instances the generalized dermatitis followed a definite local inflammation produced by local or contact irritation. The symptoms were ameliorated only after the injections had been used.

Superfatted Soap.—Kile tested the practical use of superfatted soap and a control soap on 57 young women. The evidence indicates that more discomfort was experienced when the control soap than when the superfatted product was used. Most of the subjects who reported discomfort with either soap had dry skins. Furthermore, dryness of the skin was observed by more subjects when the control soap than when the superfatted soap was used: the ratio was 3:1 for the entire group and 4:1 for those with dry skins. A few women noticed some improvement in their acne while using the control soap but not while using the superfatted product. Women with dry skins definitely preferred the superfatted soap, while those with normal or oily skins preferred the control soap.

Archives of Neurology and Psychiatry, Chicago

47:195-352 (Feb.) 1942

- *Distant Neuroanatomic Complications of Spina Bifida (Spinal Dysraphism): Hydrocephalus, Arnold-Chiari Deformity, Stenosis of Aqueduct of Sylvius, etc.; Pathogenesis and Pathology. B. W. Lichtenstein, Chicago.—p. 195.
- *Pyruvic Acid Studies in Wernicke Syndrome. H. Wortis, E. Bueding, M. H. Stein and N. Jolliffe, New York.—p. 215.
- Induction of Metrazol Convulsions with Patient Under Nitrous Oxide Anesthesia. H. D. Fabing, Cincinnati.—p. 223.
- Effect of Emotional Excitement on Insulin Content of Blood: Contribution to Physiology of Psychoses. E. Gelthorn, J. Feldman and A. Allen, Chicago.—p. 234.
- Momentary Death and Choreoathetosis Following Nitrous Oxide Anesthesia, with Recovery. E. Kasin and S. Parker, with technical assistance of S. Machover, Brooklyn.—p. 245.
- *Association Between Convulsive Seizures and Rheumatic Heart Disease. D. B. Foster, Ann Arbor, Mich.—p. 254.
- Correlations Between Patterns of Breathing and Personality Manifestations. J. W. Thompson and W. Corwin, Waltham, Mass.—p. 265.
- Intraspinal Meningiomas: Clinical and Pathologic Study. M. H. Brown, Rochester, Minn.—p. 271.
- Section of Spinothalamic Tract at Level of Inferior Olive. H. G. Schwartz and J. L. O'Leary, St. Louis.—p. 293.
- Estrogen Therapy of Agitated Depressions Associated with Menopause. L. Danziger, Sykesville, Md.—p. 305.
- "Crocodile Tears" Treated by Injection into Sphenopalatine Ganglion. H. Gottesfeld, Norristown, Pa., and F. H. Leavitt, Philadelphia.—p. 314.
- Danlos-Ehlers Syndrome: Report of Case with Transient Paralysis of Vocal Cord. J. D. Sullivan, Albany, N. Y.—p. 316.

Distant Neuroanatomic Complications of Spina Bifida.

—From a study of several cases presenting the important neuroanatomic complications of spinal dysraphism and a review of the literature, Lichtenstein finds that in many instances of spina bifida (spinal dysraphism) there is an abnormal fixation of the spinal cord which precludes its adequate rostral migration with continued development. In some cases this abnormal fixation results in a pleomorphic variety of neuroanatomic alterations in distant parts of the nervous system. The alterations are (1) short cauda equina and low lying conus medullaris, (2) abnormal stretching of the spinal cord above the fixation, (3) elongation of the hindbrain with localization in the vertebral canal of the medulla oblongata, the choroid plexus of the fourth ventricle and parts of the cerebellum, (4) dysplasia of some of the cerebellar folia, (5) elongation of the lowermost cranial nerves with their compression at the foramen magnum by the hindbrain, (6) stenosis of the aqueduct of Sylvius, (7) internal hydrocephalus due to stenosis of the aqueduct of Sylvius and to impaction of the hindbrain, (8) deformity of the medulla oblongata and of the hind end of the fourth ventricle, (9) hydro-myelia of the uppermost cervical levels of the spinal cord, (10) syringomyelic-like cavitation in the cervical portion of the spinal cord and (11) pressure on the anterior spinal arteries and the vertebral veins at the foramen magnum.

Pyruvic Acid Studies in Wernicke Syndrome.—Wortis and his associates recently observed 34 clinical cases of the Wernicke syndrome which tend to confirm the thesis that the disorder is probably a combination of several nutritional deficiencies and is not due to alcoholism alone. Of the 34 patients, 2 were depressed and refused to eat and 1 had pulmonary tuberculosis and vomiting. Delirium, with its increase in psychomotor activity and hence total metabolism, may increase the requirement of certain of the vitamins and tends to aggravate any latent deficiency state. Other deficiency syndromes, such as pellagra, nicotinic acid deficiency encephalopathy, arboflavinosis and scurvy, may and do superimpose themselves on or accompany the Wernicke syndrome. All patients receiving adequate vitamin therapy recovered unless a concomitant complicating condition was the cause of death. In patients who recovered the Korsakoff syndrome was the rule, and it did not respond to thiamine therapy. The blood pyruvate level was determined for 11 patients. The level of pyruvate in the blood during fasting ranged from 1.44 to 3.63 mg. per hundred cubic centimeters (normal is 0.77 to 1.17 mg.), and when 7 of the patients were subjected to the additional stress of metabolizing ingested dextrose not only was the maximal rise great but the elevation above the fasting level was maintained for at least

four to five hours. The maximal increase in pyruvate did not occur during the first hour as it did in normal subjects but continued to rise until maximal values were reached as late as the fourth hour. After vitamin B therapy, the level of pyruvate in the blood during fasting rapidly returned to normal, but the pyruvic acid curve following the ingestion of dextrose returned to normal only after prolonged treatment. Ophthalmoplegia disappeared and the mental status improved in twenty-four to seventy-two hours. This improvement antedated the return of pyruvate metabolism to normal. Clinical improvement was associated with a definite fall in the level of pyruvic acid in the blood during fasting. The conclusion is that patients with the Wernicke syndrome are unable to metabolize pyruvic acid properly and that prolonged treatment with components of the vitamin B complex corrects this defect.

Convulsive Seizures and Heart Disease.—Foster states that 29 patients with convulsive seizures were encountered among 2,153 with rheumatic heart disease. No patient with an associated convulsive disorder with any suggestion of cranial trauma, syphilis, alcohol, expanding intracranial lesion, uremia or other epileptogenic factors was included in the series. This incidence of 10.76 per cent is higher than that in the general population. Acute rheumatic fever or Sydenham's chorea preceded the convulsive manifestations in 58.6 per cent of the 29 patients, the relation was doubtful in 34.4 per cent and the seizures preceded the rheumatic infection in 6.8 per cent. A familial incidence of convulsive seizures or migraine was six times as frequent among the patients with rheumatic heart disease and seizures as among those with only rheumatic heart disease. Evidence from other sources corroborates the suggestion that the seizures are more than coincidental. Inferential evidence from the common occurrence of paroxysmal cardiac arrhythmia in rheumatic heart disease and the fact that cardiac arrhythmia may be accompanied by seizures affirm the foregoing statement. Several mechanisms associated with the rheumatic state are probably capable of producing seizures in predisposed persons: paroxysmal cardiac arrhythmia, passive congestion of the cerebrum, delayed auriculoventricular conduction time (with or without the superimposition of digitalis) and cerebral infarction.

Archives of Pathology, Chicago

33:145-294 (Feb.) 1942

- Studies of Cartilage: I. Some Effects of Mediums of Different pH Values on Composition of Cartilage. G. M. Hass and B. Garthwaite, New York.—p. 145.
- Id.: II. Quantitative Study of Stabilizing Action of Crystal Violet on Tissue Polysaccharide Compounds. G. M. Hass, New York.—p. 163.
- Id.: III. New Histochemical Reaction with High Specificity for Cartilage Cells. G. M. Hass, New York.—p. 174.
- Studies on Inflammation: IV. Behavior of Cellular Proteinases in Experimental Tuberculosis of Rabbits. C. Weiss, San Francisco.—p. 182.
- Leukocytosis Promoting Factor in Inflammatory Exudates of Man. V. Menkin, M. A. Kadish and S. C. Sommers, Boston.—p. 188.
- Presence of Leukocytosis Promoting Factor in Circulating Blood. V. Menkin and M. A. Kadish, Boston.—p. 193.
- Effect of Experimental Cirrhosis on Intrahepatic Circulation of Blood in Intact Animal. K. G. Wakim and F. C. Mann, Rochester, Minn.—p. 198.
- Dietary Production of Hepatic Cirrhosis in Rabbits, with Analysis of Factors Involved. M. A. Spellberg, R. W. Keeton, and R. Ginsberg, Chicago.—p. 204.
- Drainage of Pulmonary Veins into Right Side of Heart. H. Brody, New York.—p. 221.
- Pathologic Aspect of Nutritional Deficiencies in Rats: I. Lesions Produced by Diets Free of Vitamin B₆ (Pyridoxine) and Response to Vitamin B₆. W. Antopol, Newark, N. J., and K. Unna, Rahway, N. J.—p. 241.

Arkansas Medical Society Journal, Fort Smith

38:183-204 (Feb.) 1942

- Treatment of Goiter. G. V. Lewis, Little Rock.—p. 183.
- Contraception: Technic and Medical Indications. M. C. Hawkins Jr., Searcy.—p. 186.
- Workmen's Compensation as Related to Physicians. P. A. Deisch, Helena.—p. 188.

California and Western Medicine, San Francisco

56:1-54 (Jan.) 1942

- Duodenal Ulcer: Indications for and Extent of Partial Gastrectomy. V. C. Hunt, Los Angeles.—p. 6.
- Emergency Transfusions: Suggestions for Hospitals, Clinics and Laboratories. J. R. Upton, San Francisco.—p. 9.
- Newer Physiology of Biliary Tract and Its Application to Biliary Tract Disease. L. Goldman, San Francisco.—p. 10.
- Psychiatric Problems in Private Practice: Their Management. H. D. Eaton, Los Angeles.—p. 14.
- Erythroblastosis Fetalis: Report of Case. R. D. Cutter and B. L. Davis, Palo Alto.—p. 17.

Canadian Public Health Journal, Toronto

33:1-50 (Jan.) 1942

- Responsibility for Following Up Venereal Disease Contacts. W. H. Avery, Toronto.—p. 1.
- Development of County Health Units in Province of Quebec. B. LaHaye, Quebec.—p. 7.
- Relationship of the Medical Officer of Health to the Local Board of Health. J. H. Munro, Maxville, Ont.—p. 13.
- Chemical and Toxicologic Studies on Phenothiazine. R. J. Schnitzer, C. Siebenmann and H. D. Bett, Toronto.—p. 17.
- Restaurant Personnel and Methods. A. G. Macnab, Westmount, Que.—p. 25.

Cancer Research, Baltimore

2:1-78 (Jan.) 1942

- Inhibition of Diphosphopyridine Nucleotide System by Split Products of Dimethylaminoazobenzene. C. J. Kensler, S. O. Dexter and C. P. Rhoads, New York.—p. 1.
- Neurofibromas of Rat Ears Produced by Prolonged Feeding of Crude Ergot. A. A. Nelson, O. G. Fitzhugh, H. J. Morris and H. O. Calvery, Washington, D. C.—p. 11.
- Increased Viscosity of Cells of Induced Tumors. M. F. Guyer and P. E. Claus, Madison, Wis.—p. 16.
- Effect of Radioactive Phosphorus on Viability of Mouse Sarcoma 180. K. Sugiura, New York.—p. 19.
- Effect of Thorium Dioxide on Normal and Estrinized Tumor Bearing Rats. J. Heiman, New York.—p. 25.
- Comparative Studies on Radiosensitivity of Normal and Malignant Cells in Culture: I. Effect of X-Rays on Cell Outgrowth in Cultures of Normal Rat Fibroblasts and Rat Benzpyrene Induced Sarcoma. L. Halberstaeder, G. Goldhaber and L. Doljanski, Jerusalem, Palestine.—p. 28.
- Behavior of Tumor Cells in Tissue Culture Subjected to Reduced Temperatures. M. E. Sano and L. W. Smith, Philadelphia.—p. 32.
- Relationship of Endocrine System to Carcinogenesis. D. L. Smith, J. A. Wells and F. E. D'Amour, Denver.—p. 40.
- Fibromatogenic Action of Specific Urinary Estrogens (Metahormones) in Guinea Pig. A. Lipschütz, R. Thibaut and L. Vargas Jr., Santiago, Chile.—p. 45.
- Carcinogenic Effect of Estradiol and Theelin in Marsh Buffalo Mice. F. Bischoff, M. Louisa Long, J. J. Rupp and Georgina J. Clarke, Santa Barbara, Calif.—p. 52.
- Homoiotransplantation of Spontaneous Tumors into Mice Bearing Spontaneous Tumors. H. T. Blumenthal, St. Louis.—p. 56.
- *Influence of Syphilis in Cancer of Cervix Uteri. W. G. Harding 2d, Sydney, Australia.—p. 59.

Syphilis and Cancer of Cervix.—Harding states that among 227 consecutive charity patients with epithelioma of the cervix uteri 36 were syphilitic and 191 were free from syphilis. In the syphilitic women carcinoma developed at an average age of 47 years, as compared to 51 years in the nonsyphilitic women of the series. Among the nonsyphilitic women there was a higher percentage of grade 1 carcinoma, and they showed less extensive involvement than the women with syphilis.

Connecticut State Medical Journal, Hartford

6:79-154 (Feb.) 1942

- Gynecologic Problems of Childhood and Adolescence. A. H. Morse, New Haven.—p. 81.
- The Problem Child. M. C. Pease, New York.—p. 86.
- Convulsions in Children: Diagnostic Routine and Treatment. W. J. German, New Haven.—p. 88.
- Contribution of Orthopedics to Early Treatment of Anterior Poliomyelitis. A. L. Shure, New Haven.—p. 91.
- Craniopharyngioma: Tumor of Hypophyseal Duct (Rathke's Cyst). C. W. Perkins, Norwalk.—p. 94.
- Cholecholesterol Cyst: Case Report. A. J. Mendillo and W. B. Koufman, New Haven.—p. 99.
- The Law and Planned Parenthood: Case Report. M. C. Winternitz and H. Bunting, New Haven.—p. 102.
- Calcified Cyst of Pericardium. F. E. Tracy, Middletown.—p. 103.
- Early Physicians of Windham County and Founding of Windham County Medical Association. R. L. Gilman, Storrs.—p. 107.

Delaware State Medical Journal, Wilmington

14:1-18 (Jan.) 1942

- Significance of Hematuria. W. H. Kinney, Philadelphia.—p. 2.
- *Observations on Kenny Treatment. G. J. Boines, Wilmington.—p. 11.

Kenny Treatment.—Since November 1941 Boines has used the Kenny method (passive and active movement and hot fomentation to relieve the spasticity of the affected muscles) for 16 patients with poliomyelitis. Five of the patients showed 100 per cent recovery within six weeks, 7 showed 90 per cent and 4 showed 75 per cent. Trained technicians are necessary to carry out the passive movements and the muscle reeducation exercises. The National Foundation for Infantile Paralysis has approved the Kenny method. It was clearly demonstrated in the author's 16 patients that no deformity, stiff joints or apparent muscular atrophy resulted. Even some long-standing uncomfortable deformities can be helped with the Kenny treatment. The bright, hopeful, cheerful effect of the treatment on the patient, parents and nursing attendants should not be overlooked. The day by day recovery of muscles is an inspiration to the nurse and to parents and promises a future recovery to the patient. The care of the patient with poliomyelitis as outlined by Sister Kenny consists in 70 per cent nursing care and medical supervision. Corrective and stabilizing operations are necessary when they are indicated. Another advantage of the treatment is that, if residual paralysis does result, the muscles are better preserved for reconstructive orthopedic surgery. The hot fomentations stimulate circulation and bring more leukocytes to the affected parts, which remove the toxins and virus from the body.

Iowa State Medical Society Journal, Des Moines

32:1-52 (Jan.) 1942

- Military Medicine in Its General Application. S. U. Marietta, Washington, D. C.—p. 1.
- Treatment of Traumatic Incidents in Psychiatric Individuals. W. R. Hansa, Omaha.—p. 7.
- *Clinical Problem of Infectious Mononucleosis. J. E. McFarland, Ames.—p. 10.
- Nonmalignant Lesions of Large Bowel. C. B. Meffert, Cedar Rapids.—p. 12.
- Surgical Treatment of Chronic Dacryocystitis. J. E. Reeder Jr., Sioux City.—p. 15.
- Actinic Therapy in Middle Ear Infections. F. J. Chapman, Keokuk.—p. 20.
- Dislocation of Pelvis Without Fracture: Report of Case. D. N. Gibson, Des Moines.—p. 23.

32:53-102 (Feb.) 1942

- Surgical Treatment of Carcinoma of Lower Portion of Colon. C. W. Mayo, Rochester, Minn.—p. 53.
- Torsion of Gallbladder. E. D. McClean and H. G. Ellis, Des Moines.—p. 56.
- Vitamin B. Complex. W. H. Schrell, Washington, D. C.—p. 60.
- Diagnosis and Treatment of Infections of Upper Urinary Tract. M. M. Benfer, Davenport.—p. 62.
- Headache of Ocular Origin. R. J. Stephen, Cedar Rapids.—p. 66.
- Variations Between Oral and Rectal Temperature Readings. H. Stabler, Iowa City.—p. 70.
- Fedunculated Lipoma. J. A. W. Johnson, Newton.—p. 71.

Infectious Mononucleosis.—McFarland states that to diagnose infectious mononucleosis early many conditions must be differentiated, and that when a patient has onset of fever, vomiting, pain and tenderness in the right lower quadrant of the abdomen and leukocytosis it is practically impossible to differentiate the disease from appendicitis. The author has performed appendectomy on 3 children who proved to have enlarged mesenteric nodes but not appendicitis and in whom the typical picture of mononucleosis developed later. However, more recently 1 of his patients had to have an appendical abscess drained. He suggests that perhaps mesenteric lymphadenitis is frequently if not always infectious mononucleosis. The prolonged convalescence in mesenteric lymphadenitis fits well with that of mononucleosis. An early blood smear showing only polymorphonuclear leukocytes, an elevation of the temperature higher than that usually seen in appendicitis, pain out of proportion to the tenderness and rigidity, and vomiting out of proportion to all three should suggest mononucleosis. Other nodes are likely to be enlarged, and granular pharyngitis will nearly always be present. Other members of the patient's family may later show more readily identified stages of the disease. How-

ever, in spite of all this it is still unsafe to postpone operation, but with more surgeons on the lookout it may be possible to prove or disprove the identity of any of the diseases mentioned and to make a satisfactory preoperative diagnosis.

Journal of Allergy, St. Louis

13:105-214 (Jan.) 1942

- Effect of Wide Variations in Potassium and Sodium Intake in Asthmatic Children. G. F. Harsh and P. B. Donovan, San Diego, Calif.—p. 105.
Immunologic Response of Allergic Children to Toxoid. T. B. Friedman, J. A. Bigler and Marie A. Werner, Chicago—p. 114.
Estrogenic Hormone Determinations in Premenstrual Asthma. G. L. Waldbott and L. J. Bailey, Detroit—p. 125.
Extraction of Ragweed Pollen as Observed with Ultramicroscope. E. A. Brown, London, England, and N. Benotti, Boston—p. 144.
Studies on Immunology of Ragweed Pollen Proteins* II. Anaphylactic Experiments. M. Mosko, R. Hecht and H. Weil, Chicago—p. 149.
Relationship of Maternal Diet to Intrauterine Sensitization. B. Zohn, Brooklyn—p. 153.
*Prophylactic Oral Therapy Against Poison Ivy. H. Gold and P. Masucci, Chester, Pa.—p. 157.
Cereal-Free Elimination Diets and Soybean Emulsion for Study and Control of Infantile Eczema. A. H. Rowe and C. L. Mauser, Oakland, Calif.—p. 166.

Oral Therapy Against Ivy Poisoning.—Gold and Masucci studied the prophylactic effect of oral therapy against ivy poisoning in 20 subjects known to be susceptible. Treatment consisted in having the patient swallow tablets containing 0.5, 2, 5 or 10 mg. of poison ivy oleoresin after the noon meal. The initial dose was one half or one 0.5 mg. tablet. Treatment was given daily unless severe reactions occurred, when it was given every other day or at longer intervals. The dose was increased according to the patient's tolerance. The maximal dose, fifteen 10 mg. tablets, was reached by all but 1 patient, who took 500 mg. a day without untoward effects. After treatment, vesicles and pruritus following field tests, which were more severe than normal accidental exposure, were absent in 17 and present in 3 subjects. These observations confirm those of Shelmire that previous attempts at immunization by subcutaneous injection failed because the extracts used were not potent and the dose was inadequate. The largest amount that other investigators were able to inject was 0.5 cc. of a 1:50 solution, and this invariably produced severe local reactions. The value of oral desensitization is obvious, and the danger of contact dermatitis from handling and swallowing the liquid preparation as advised by Shelmire is removed. The tablets have retained their potency for two and five-tenths years. Large, well controlled clinical trials of the prophylactic measure should be done to determine its true usefulness.

Journal of Bone and Joint Surgery, Boston

24:1-244 (Jan.) 1942. Partial Index

- Surgery of Intrinsic Muscles of Hand Other Than Those Producing Opposition of Thumb. S. Bunnell, San Francisco—p. 1.
Influence of Estrogens on Shape of Long Bones. J. L. Bremer, Boston.—p. 32.
Calcification and Ossification* III. Role of Local Transfer of Bone Salt in Calcification of Fracture Callus. M. R. Urist, Baltimore.—p. 47.
*Clinical Significance of Certain Microscopic Changes in Muscles of Anterior Poliomyelitis. H. E. Hipps, Marlin, Texas—p. 68.
Use of Preserved Bone Graft in Orthopedic Surgery. A. Indian, Havana, Cuba—p. 81.
Valgus Deformity of Knee Resulting from Injury to Lower Femoral Epiphysis. L. C. Abbott and G. G. Gill, San Francisco—p. 97.
Calcaneous Tendinitis in Metacarpophalangeal Region. W. Cooper, Brooklyn—p. 114.
Treatment of Coxitis. D. V. Marshall, Hull, England—p. 169.
March Fracture of Femur. Report of Case. L. T. Peterson, Washington, D. C.—p. 185.
Sentinel Pains: Its Significance in Diagnosis of Cauda Equina Tumors: Report of Four Cases. A. Kaplan, M. B. Bender and M. Spirstein, New York—p. 193.

Microscopic Changes of Muscles in Poliomyelitis.—Hipps studied at operation the muscles of patients who had had anterior poliomyelitis for two years or more. The patients were often given physical therapy for varying periods of time before some necessary standard operation was performed. The incision, however, was lengthened enough so that the muscle was visualized fully. Sections for microscopic study were removed from the most damaged part of each muscle. The microscopic evidence suggests that a gain in strength by a partially paralyzed muscle occurs not through the formation of

new fibers but through an overdevelopment or hypertrophy of the remaining undamaged cells. Pathologic changes are brought about primarily through denervation and secondarily from abnormal variations of tension in the muscle. The cellular changes from denervation begin with atrophy and progress to degeneration, disintegration and replacement changes. These pathologic stages due to secondary factors occur in muscle cells in the same way. Too much tension or overstretching results in minute tears, zonal degeneration and subsequent fibrosis, while too little tension produces changes identical with those produced by denervation. The secondary abnormalities may produce just as much weakness as the primary denervative changes. Secondary changes following immobility and disuse appear more severe than those following overactivity. Nothing much can be done for muscle cells which have lost their motor neurons and have regressed or are regressing. The knowledge that secondary changes do occur should be of practical value in planning preventive treatment.

Journal of Experimental Medicine, New York

75:135-246 (Feb.) 1942

- Quantitative Experiments with Antibodies to Specific Precipitate* III. Antigenic Properties of Horse Serum Fractions Isolated by Electrophoresis and by Ultracentrifugation. H. P. Treffers, D. H. Moore and M. Heidelberger, New York—p. 135.
LS Antigen of Vaccinia: I. Inhibition of L and S Antibodies by Substances in Treated Vaccine Dermal Filtrate. J. E. Smadel and T. M. Rivers, New York—p. 151.
Id.: II. Isolation of Single Substance Containing Both L and S Activity. T. Shedlovsky and J. E. Smadel, New York—p. 165.
Effect of Various Diets on Liver Damage Caused by Excess Cystine. D. P. Earle Jr. and J. Victor, New York—p. 179.
Liver Damage and Urinary Excretion of Sulfate in Rats Fed Cystine, dl-Methionine and Cysteic Acid. D. P. Earle Jr. and F. E. Kendall, New York—p. 191.
Cell State as Affecting Susceptibility to Virus* Enhanced Effectiveness of Rabbit Papilloma Virus on Hyperplastic Epidermis. W. F. Friedewald, New York—p. 197.
Red Cell and Plasma Volumes (Circulating and Total) as Determined by Radio Iron and by Dye. P. F. Hahn, J. F. Ross, W. F. Bale, W. M. Balfour and G. H. Whipple, Rochester, N. Y.—p. 221.
Influence of Age on Susceptibility of Mice to St. Louis Encephalitis Virus and on Distribution of Lesions. J. L. O'Leary, Margaret G. Smith and H. R. Reames, St. Louis—p. 233.

Journal of Lab. and Clinical Medicine, St. Louis

27:419-568 (Jan.) 1942. Partial Index

- Systemic Histoplasmosis Diagnosed Before Death and Produced Experimentally in Guinea Pigs. J. D. Reid, J. H. Scherer, P. A. Herbut and H. Irving, Richmond, Va.—p. 419.
Pathology of Atrophic Arthritis* Correlated Clinical and Laboratory Study. C. L. Steinberg, Rochester, N. Y.—p. 435.
Sodium Sulfapyridine Monohydrate Intravenously in Treatment of Lobar Pneumonia. A. Levitt, H. T. Schweitzer and K. Goldstein, Buffalo.—p. 443.
Average Length of Life of Red Corpuscle. Dona Gayler Graam, Terre Haute, Ind.—p. 448.
Effect of Lowered Temperatures on Growth of Fibroblast in Vitro Its Application to Wound Healing. M. E. Sano and L. W. Smith, Philadelphia—p. 460.
Unusual P Wave in Chest Lead CF₂ Following Spontaneous Pneumothorax. S. D. Burton and J. S. Mehlman, Chicago—p. 465.
Plasma Albumin, Globulin and Fibrinogen in Healthy Individuals from Birth to Adulthood. II. "Normal" Values. Virginia Trevorow, Margaret Kaser, Jean Paton Patterson and R. M. Hill, Denver—p. 471.
Use of Dihydroxycholesterol in Parathyroid Tetany: Report of Case. F. E. Harding, Los Angeles—p. 497.
Comparative Physiologic Value of Injected Carotene and Vitamin A. June G. Lease, E. J. Lease, H. Steenboch and C. A. Baumann, Madison, Wis.—p. 502.
Oral Ascorbic Acid Tolerance Test and Its Application to Senile and Schizophrenic Patients. E. Stotz, B. M. Shummers and R. A. Chittick, Boston—p. 518.
*Effect of Yeast and Muscle Adenylic Acid in Malnourished Persons with Pellagra and Peripheral Neuritis. R. W. Vilter, W. B. Bean and T. D. Spies, Cincinnati—p. 527.

Growth of Fibroblast in Vitro.—Sano and Smith observed the behavior of the fibroblast in tissue culture at temperatures varying from 32 to 98.6 F., and on the basis of their observations they suggest that hypothermy be used more widely in wound healing. The reduction of temperature to between 77 and 86 F. gives optimal conditions for satisfactory wound healing: the cells grow vigorously, they pack closely and the circulation is slowed. Thus the products of metabolism are and remain in close contact with the cells, as the slowed blood stream is unable to carry them away. In addition the lowered

temperature is somewhat bacteriostatic and aids materially in checking infection. Finally, if epithelization is accomplished too rapidly the underlying granulation tissue tends to undergo regressive changes, the collagen contracts and a depressed secondarily contracted scar results, but if the process of repair is slowed the connective tissue is adequate in amount and compactly arranged, with relatively little collagen, and the final scar is minimal, with little or no retraction. The application of hypothermy in plastic surgery, in preventing the formation of keloid and in clearing up old lesions from osteomyelitis is a field to be investigated.

Adenylic Acid for Malnourished Persons.—Vilter and his co-workers point out that the role of adenylic acid in human nutrition is important and extremely diversified. Two to five days after daily intravenous injections of 50 mg. of adenylic acid from yeast or from muscle, ulcers in the mouths of 6 malnourished persons disappeared. In contrast, ulceration in the mouths of 3 persons with stomatitis but with no evidence of a dietary deficiency did not improve. Therapy with yeast or muscle adenylic acid to persons with *pellagrous glossitis* or subclinical symptoms of pellagra caused rapid improvement in strength and well-being and the disappearance of the burning sensation of the mucous membranes. Giving yeast adenylic acid to 6 persons with peripheral neuritis who obtained no benefit from brewers' yeast or thiamine hydrochloride brought about spontaneous relief from pain and hyperesthesia; the perception of light touch improved, and the patients were able to walk without pain. Because the therapy produced immediate reactions and concomitant electrocardiographic changes the authors do not recommend adenylic acid for general therapeutic use. Nicotinic acid, thiamine hydrochloride and a diet rich in protein and calories continue to be the most efficient therapeutic agents for most malnourished persons with ulcerative stomatitis and peripheral neuritis.

Journal of Urology, Baltimore

47:1-58 (Jan.) 1942

- Treatment of Wilms' Tumor. J. T. Priestley and T. L. Schulte, Rochester, Minn.—p. 7.
Sulfacetamide or Sulfamyl (Schering): Clinical Study of Efficiency and Toxicity in Urinary Tract Infections and Comparison with Sulfanilamide Therapy. R. J. Prentiss and J. F. Kanealy, Iowa City.—p. 11.
Prostatic Obstruction in Young Adults: Report of Five Cases. H. A. Fowler, Washington, D. C.—p. 16.
Physiology of Testis and Application of Male Sex Hormone. C. R. Moore, Chicago.—p. 31.
Significance of Randall's Papillary Lesions in Causation of Renal Calculi. K. T. Kjølhed and H. K. Lassen, Copenhagen, Denmark.—p. 45.

Kansas Medical Society Journal, Topeka

43:1-44 (Jan.) 1942

- Prevention and Control of Surgical Infections in General Hospital. S. L. Koch, Chicago.—p. 1.
Recognition and Treatment of Curable Diseases of Heart. M. Snyder, Salina.—p. 6.
Chronic Nephritis and Hypertension—Clinical Aspects. H. N. Tihen, Wichita.—p. 11.

Laryngoscope, St. Louis

52:1-82 (Jan.) 1942

- Review of Articles on Tuberculosis in Field of Otolaryngology Chiefly for Late 1940 and Early 1941. F. R. Spencer, Boulder, Colo.—p. 1.
Cancer of Paranasal Sinuses. W. L. Watson, New York.—p. 22.
Congenital Webs of Larynx. H. E. McHugh, Montreal, Canada, and W. E. Loch, Baltimore.—p. 43.
Cough. M. S. Lloyd, New York.—p. 66.
The "Blocked Ear" of the Caisson Worker. R. Almour, New York.—p. 75.

Laval Médical, Quebec

7:1-74 (Jan.) 1942. Partial Index

- Grave Ulcerative Colitis. J. P. Dugal, Quebec, Canada.—p. 11.
*Treatment of Congenital Clubfoot (from Birth to Four Years of Age). L. P. Roy, Quebec, Canada.—p. 16.
Metrazol and Epilepsy. G. H. LaRue and A. Pelletier, Quebec, Canada.—p. 22.

Treatment of Congenital Clubfoot.—Roy discusses the incidence, sex distribution, hereditary character and various types of clubfoot. Ombredanne divides the evolution of talipes into three periods: 1. The period of complete reducibility, dur-

ing which reduction can be accomplished by hand and without violence; this is possible up to the age of 15 days or even a year. 2. The period of relative irreducibility, during which osseous reposition is hindered by ligamentous, tendinous or cutaneous retractions but during which it is possible to remove these obstacles; this is the period between 2 and 4 years. 3. The period of absolute irreducibility, which ensues after the age of 4 years. The prognosis of congenital talipes varies with age, degree of deformity and rigidity, treatment and the period during which the child is observed, because relapse is possible even in a well reduced clubfoot. Early redressement is now almost universally applied. Some surgeons wait until the child is about a year old to perform instrumental redressement. The author thinks that early and mild manual redressement is infinitely better than the brutal manipulations and that treatment should begin when the child is 8 days old. The first deformities to be corrected are the adduction and the supination. While one hand grasps the heel, the other holds the anterior portion of the foot, and abduction is effected. Thus the internal edge tends to become convex and the external edge concave. Against supination one hand grasps the region of the ankle while the other holds the foot and turns it in order to lower the internal and raise the external border. It is necessary to respect the equinus in order to correct the first two deformities; this makes a more solid support. Up to the age of 2 or 3 months these maneuvers can be made without anesthesia; after that a little anesthetic should be given. It is better to correct a clubfoot in several sessions at intervals of several weeks than to make a redressement forcé all at once. Fixation is even more important than reduction. In the newborn, even up to 1 month, the author employs elastoplast, but some workers employ plaster of paris. If a child between 12 and 18 months of age, even perhaps up to 2 years, is brought to the physician a somewhat forced manual redressement is necessary under general anesthesia, which in about 80 per cent of the cases must be accompanied by tenotomy of the achilles tendon. A plaster of paris boot is put on for six to eight weeks and may have to be replaced later. The treatment of the period of relative irreducibility, that is, of the age between 2 and 4 years, consists in forced manual redressement followed by use of a plaster cast for two months; tenotomies of the internal lateral section are often necessary.

Missouri State Medical Assn. Journal, St. Louis

39:1-28 (Jan.) 1942

- Ovarian Hormones and Their Clinical Uses. W. M. Allen, St. Louis.—p. 1.
Spontaneous Interstitial Mediastinal Emphysema: Report of Case. J. P. Murphy and L. B. Zeis, St. Louis.—p. 5.
Foot Conditions. M. B. Roche, St. Louis.—p. 7.
Congenital Duodenal Obstruction. A. D. Vail and E. J. Schwartz, Springfield.—p. 12.

39:29-64 (Feb.) 1942

- Sarcoidosis: Report of Two Cases with Pulmonary Involvement. H. I. Spector, St. Louis.—p. 29.
*Prophylaxis in Epidemic Influenza. S. E. Sulkin and J. C. Edwards, St. Louis.—p. 33.
Abnormal Mental Reactions of Old Age. G. W. Robinson Jr., Kansas City.—p. 36.
Acute Appendicitis: Present Day Concepts of Treatment. E. V. Martin, St. Louis.—p. 41.
Thyroidectomy: Study of 200 Consecutive Cases. P. F. Stokley and M. R. Bay, Kansas City.—p. 43.
*Effect of Mineral Water on Kidney Function Tests. R. O. Morthet, G. T. Flynn and R. A. Mezera, St. Louis.—p. 45.
Stag Horn Calculus Removal by V Shaped Nephrotomy. L. H. Pollock, Kansas City.—p. 48.
Vesical Neck Obstruction: Result of Twelve Years' Study of Cases Encountered in Country Practice. G. W. Gay, Ironton.—p. 51.
Convulsive Shock Therapy Induced by Electricity. P. Shelton, Kansas City.—p. 53.

Prophylaxis in Epidemic Influenza.—Sulkin and Edwards state that the prophylaxis of epidemic influenza in animals and human beings with the complex vaccine containing influenza A and distemper virus, while not entirely effective, produces immunizing antibodies. The neutralizing antibodies that result from the administration of the vaccine persist for six months. Although many instances of influenza occurred in the institutions in which the authors' clinical experiments were carried on, the disease did not develop in any of the vaccinated persons.

Effect of Mineral Water on Tests of Renal Function.—Muether and his associates determined the effect of a particular mineral water on renal function. Of 16 patients with a urea clearance of 50 or more per cent of normal when they used tap water, 12 showed an increased urea clearance after four days of taking the mineral water and 4 showed a definite decrease. Of 9 patients whose urea clearance with tap water was less than 50 per cent of normal, 7 showed an increased and 2 a decreased ability to clear urea after using the mineral water. Twenty-four tests for the total output of phenolsulfonphthalein were done on 21 patients who had less than a 50 per cent output when they used tap water. The use of the mineral water improved the phenolsulfonphthalein excretion in twenty-one, or 87.5 per cent, of the tests. The phenolsulfonphthalein excretion of only 3 patients was lower after the use of the mineral water than it was with tap water. Twelve of fifteen tests on 13 patients who had a phenolsulfonphthalein excretion of more than 50 per cent with tap water showed an increased output when mineral water was used. The apparent effectiveness of the mineral water to improve the renal excretion of certain substances warrants further investigation.

Nebraska State Medical Journal, Lincoln

27:41-76 (Feb) 1942

- Practical Considerations in Present Day Chemotherapy A E Brown and W. E. Herrell, Rochester, Minn.—p 41
Chemotherapy in Acute Communicable Diseases E S Wegner, Lincoln—p 47
Chemotherapy in Otitis Media and Mastoiditis P N Morrow, Omaha—p 51
Chemotherapy in Upper Respiratory Infections, with Special Reference to Throat G C O'Neil, Omaha—p 55
Ophthalmia in Newborn W H Morrison, Omaha—p 58
Sequelae of Knee Ligament Strain Pellegrini Stueda's Disease (Metacondylar Traumatic Osteoma) W. R. Hamsa, Omaha—p 62
Acute Peritonitis—Preoperative Immunization with Amfetin F J Murray, Omaha—p 65

New England Journal of Medicine, Boston

226:1-36 (Jan 1) 1942

- Blast and Concussion in the Present War J F Fulton, New Haven, Conn.—p 1
Enterococcal Endocarditis Report of Two Cases D Skinner and J E Edwards, Boston—p 8
Left Inguinal Hernia with Acute Meckel's Diverticulitis and Peritonitis Report of Case R Lum and S T Iadd, Portsmouth, N H—p 15
Irradiation in Treatment of Cancer of Breast F W O'Brien and E McDonald, Boston—p 17
Medical Aspects of Obstetrics J A Smith, Boston—p 21

226:37-80 (Jan 8) 1942

- Middlesex South and Massachusetts Medicine H G Giddings, Newton Centre, Mass.—p 37
*Hyperactive Cardioinhibitory Carotid Sinus Reflex as Aid in Diagnosis of Coronary Disease Its Value Compared with That of Electrocardiogram L H Sigler, Brooklyn—p 46
*Treatment of Angina Pectoris with Testosterone Propionate Preliminary Report M A Lesser, Boston—p 51
Use of Aspirating Needle in Diagnosis of Solitary Renal Cyst B C Wheeler, Worcester, Mass.—p 55
Abdominal Surgery A W Allen, Boston—p 57

Carotid Sinus Reflex.—Sigler determined the relative frequency of the cardioinhibitory carotid sinus reflex and of abnormalities in the electrocardiogram of 1,073 patients with coronary disease. Observations show that the hyperactive cardioinhibitory carotid sinus reflex occurs more frequently in the disease than do abnormalities in the electrocardiogram. Therefore the test may perhaps be considered of more diagnostic value than the electrocardiogram in recognition of the disease. However, like any other test or method of examination, use of the reflex has its shortcomings and pitfalls. The reflex does occur in disorders other than coronary disease, and it may be absent in coronary disease. It may perhaps be considered a definite sign in coronary disease if it occurs as an independent phenomenon unassociated with other reflexes of the carotid sinus group, such as a definite fall in blood pressure, dizziness, sensory disturbances and syncope, if it occurs as the principal manifestation of the sinus reflex and if it appears after comparatively slight pressure on the carotid sinus region and no other vagal disturbance occurs. Under such circumstances the selective augmentation of the induced vagal impulse is in the cardiac ganglions rather than in the ganglions of vagal centers

in the medulla. If such augmentation occurred in the medullary centers, it would conceivably affect the entire vagal system. Of the 784 men in the series 91.3 per cent and of the 289 women 72.6 per cent showed the cardioinhibitory response, whereas the electrocardiograms of only 63 per cent of the men and 71.9 per cent of the women showed abnormalities. The explanation for the frequency of the hyperactive reflex in coronary disease is at present purely theoretical. It may be due to local cardiac ischemia which lowers the resistance in the vagal ganglions and in the myoneural junctions or which produces some chemical changes that sensitize the vagus nerves locally.

Testosterone Propionate Therapy of Angina Pectoris.

—Lesser reports that 20 men and 4 women from 40 to 77 years of age with an established diagnosis of angina pectoris were treated with testosterone propionate. The drug was administered intramuscularly every second to fifth day in 25 mg doses for a total of five to twenty-five injections, with an average of eleven injections. The frequency, severity and duration of attacks were diminished in all patients, and the patients have been able to increase considerably their physical activity without precipitating an attack. The beneficial effects persisted for two to twelve months after treatment was withdrawn. The improvement in men was much greater than that in women. No improvement followed control injections of sesame oil, although the control patients responded when given testosterone propionate therapy. Untoward effects were not observed. Fluoroscopic examinations, serial kymograms and electrocardiograms revealed no uniform result from the therapy. Testosterone propionate may be a valuable drug in the treatment of angina pectoris, and the results warrant further investigation.

New Jersey Medical Society Journal, Trenton

39:1-56 (Jan) 1942

- The Doctor in the Army R A Kilduffe, Atlantic City—p 5
The Hospital in Civilian Defense H van Z Hyde, New York—p 12
Erythremic Response to Liver Therapy in Treatment of Pernicious Anemia P B Ferrary Totowa—p 19
Anorectal Punt, Its Causes and Treatment J Gerendasy, Elizabeth—p 21
Differential Diagnosis Between Acute Diseases of Chest and of Abdomen G P Muller, Philadelphia—p 27
Differential Diagnosis in Peripheral Vascular Disease F C Dimeg, East Orange—p 30

New Orleans Medical and Surgical Journal

94:311-360 (Jan) 1942

- Development of Legal Psychiatry in Louisiana R C Young, Covington, La.—p 311
Status of Psychiatry in Louisiana H R Unsworth, New Orleans—p 318
Spastic Colitis in Infancy and Childhood C J Bloom New Orleans—p 322
*Vitamin Stilbestrol in Treatment of Hypo-Ovarianism W H Byrne, J C Weed B B Weinstein and C G Collins New Orleans—p 330
Anlagen and "Rest" Tumors of Lung Their Protean Histologic Patterns in Bronchiogenic Neoplasia W H Harris and H J Schattenberg, New Orleans—p 333
*Report on Recently Observed Cases of Weil's Disease C J Wilen, J R Snavely and F E Bruno New Orleans—p 338
Weil's Disease (Spirochetel Jaundice) Report of Case J A Durand, Baton Rouge, La.—p 341
Oral Administration of Mercurial Diuretic in Treatment of Congestive Heart Failure K L Dickens, New Orleans—p 344

Diethylstilbestrol for Hypo-Ovarianism.—Byrne and his associates state that the addition of vitamin complexes to diethylstilbestrol given to 35 patients with physiologic ovarian failure and to 12 with ovarian deficiency resulting from surgical procedures did not minimize the incidence of nausea occasioned by diethylstilbestrol alone.

Weil's Disease.—Wilen and his co-workers point out that during August and September 1941 a diagnosis of Weil's disease was made on 4 male patients at the Charity Hospital. All 4 patients had chills, a sudden onset with fever, prostration, muscular aching pains, jaundice and leukocytosis with a white cell count not exceeding 15,000. An interesting feature in the history of 2 of the patients was the fact that they were neighbors and that there were jaundiced cattle in the immediate vicinity of their homes. The serum of one of these cows failed to agglutinate *Leptospira icterohemorrhagiae* and *Leptospira canicola*, and inoculations into guinea pigs with blood from this

cow proved negative. However, the owner of the cow and one of his employees gave a history of a recent severe illness of ten days with a sudden onset associated with fever, prostration, smoky urine and questionable jaundice. Laboratory studies were negative for *Leptospira icterohemorrhagiae*.

New York State Journal of Medicine, New York

42:97-192 (Jan. 15) 1942

Present Status of Therapeutic Regional Analgesia. E. A. Rovenstine and H. M. Wertheim, New York.—p. 123.

Ophthalmoscopic Findings versus Sinusitis. A. J. Bedell, Albany.—p. 128.

*Dissemination of Tubercle Bacilli from Fresh Autopsy Material. R. A. Sloan, Buffalo.—p. 133.

Rectocele: Constant Lesion Frequently Overlooked in Standard Repairs. J. W. Davies, New York.—p. 135.

Problem of Pruritus Vulvae. J. E. King, Buffalo.—p. 140.

Chronic Hypertrophic Osteoarthritis in Cervical Spine with Radiculitis: Report of Forty Cases with Review of Literature, Together with Some Notes on Effective Methods of Treatment—Part I. L. C. Kelly, New York.—p. 144.

Dissemination of Tubercle Bacilli from Fresh Necropsy Material.—In trying to determine the validity of the statement that fresh necropsy material is relatively innocuous as a contaminant of air, Sloan made a glass-enclosed elevating shield and placed it 8 inches (20 cm.) above the pulmonary specimens to be examined from 10 patients who had died from tuberculosis. Necessary precautions were taken before and during the examination so that all drafts from fans and open windows were eliminated. He observed that necropsy methods which make use of a compression technic contaminate the atmosphere in the immediate vicinity. Within the limitations of his study, fresh tuberculous lungs are definitely dangerous and are a potent source of atmospheric contamination. Proper methods of protection should be devised.

North Carolina Medical Journal, Winston-Salem

3:1-52 (Jan.) 1942

Medical Management of Bleeding Gastric and Duodenal Ulcer. C. G. Reid, Charlotte.—p. 1.

Cesarean Section: Its Incidence and Fetal Mortality in Some Cities in North Carolina. C. H. Mauzy, Winston-Salem.—p. 5.

Public Health Problems Created in Flood Disasters. R. F. Young, Halifax.—p. 8.

Intranasal Tumors. B. E. Ellis, Indianapolis.—p. 12.

Recurrent Urolithiasis. G. A. Hawes, Charlotte.—p. 16.

Present Status of Male Sex Hormone. F. K. Garvey, Winston-Salem.—p. 22.

*Some Features of "Virus Pneumonia." J. Moss, Durham.—p. 27.

Occupational Dermatoses. P. G. Reque and P. L. Williams, Durham.—p. 30.

Combination of Clavicular Cross and Figure of Eight Dressing in Treating Fractures of Clavicle. W. E. Miller, Whiteville.—p. 33.

Virus Pneumonia.—Moss reports 3 cases of probable "virus pneumonia." The onset was characterized by a harassing, at times paroxysmal, cough, which was nonproductive or productive of only a small amount of mucopurulent sputum. There was no pleurisy. Bacteriologic studies failed to demonstrate the etiologic organism. Repeated leukocyte counts were normal or only slightly elevated. The temperature was rather high during the first few days of the disease, and there was a relative bradycardia until the temperature fell by lysis on the fifth to the seventh day. Two of the 3 patients showed no physical sign of pneumonia until the lesion was revealed in a roentgenogram. Physical signs, when present, were those of incomplete consolidation. The disease was refractory to sulfonamide therapy. Although deaths from "virus pneumonia" have been reported, the disease is relatively benign. It is highly communicable (the author's patients comprised the original patient and his two nurses).

Public Health Reports, Washington, D. C.

57:33-64 (Jan. 9) 1942

Sanitation and Bacteriology of Public Eating Utensils: Investigation of Public Eating and Drinking Establishments in Providence, R. I. M. P. Horwood and P. J. Pesare.—p. 33.

Antituberculin Serum. E. Francis and L. D. Felton.—p. 44.

Southern Medical Journal, Birmingham, Ala.

35:1-122 (Jan.) 1942. Partial Index

Ureterointestinal Implantation: Experimental and Clinical Results with New Method. H. J. Jewett, Baltimore.—p. 1.

Intracranial Vascular Accidents: Medical or Surgical. R. M. Klemme, St. Louis.—p. 11.

Procaine Hydrochloride Infiltration in Obstetrics. W. Bickers, Richmond, Va.—p. 17.

Anuria Occurring During Latter Part of Pregnancy or Following Labor. C. E. Gaupin, Louisville, Ky.—p. 21.

Perforation of Aspirated Cedar Leaf Through Chest Wall. F. H. Doven, Jacksonville, Fla.—p. 24.

*Use of Various Sulfanilic Acid Derivatives in Trachoma. K. W. Cosgrove and L. K. Hundley, Little Rock, Ark.—p. 43.

Sulfaguanidine in Treatment of Bacillary Dysentery. Lydia B. Edwards, Baltimore.—p. 48.

Use of Sulfonamides in Clean Operative Wounds. J. A. Key, St. Louis.—p. 55.

Boric Acid. H. King, Nashville, Tenn.—p. 59.

Some Gynecologic Uses of Chemotherapy. J. L. McKelvey, Minneapolis.—p. 62.

Syphilis Among Selective Service Registrants in a Southern County. A. J. Perley, Lafayette, Ala.—p. 65.

Röntgen Rays in Diagnosis of Pulmonary Tuberculosis. R. G. Giles and C. J. Koerth, San Antonio, Texas.—p. 70.

Sinusitis in Children. J. J. Shea, Memphis, Tenn.—p. 74.

Tomorrow's Children—Our Responsibility Today. W. W. Quillian, Coral Gables, Fla.—p. 77.

The Psychiatrist Looks at War. D. C. Wilson, Charlottesville, Va.—p. 79.

Sulfanilic Acid Derivatives for Trachoma.—Cosgrove and Hundley state that 1,866 patients from the Arkansas Trachoma Service have been given various sulfanilic acid derivatives. The trachoma of 402 (21.5 per cent) was improved, that of 1,359 (73 per cent) was arrested and that of 105 (5.5 per cent) was not improved. The visual impairment of 74.7 per cent of the patients was arrested, that of 19.9 per cent was improved and that of 5.4 per cent was not improved. The improvement in vision has been from 5 to 80 per cent. As 8.7 per cent of the patients have complications which require surgical intervention and 3.5 per cent have been observed for less than three months, the total in which trachoma can be arrested is near 90 per cent. The results show that a sufficient dose of any one of the sulfonamides is equally effective. An average of 1.85 mg. per hundred cubic centimeters of free sulfanilamide in the blood is required to arrest trachoma. Oral administration, supplemented by local application, permits the use of smaller doses. Ambulatory treatment is possible, and there is no danger of serious reactions.

Surgery, Gynecology and Obstetrics, Chicago

74:1-128 (Jan.) 1942

*Erythroblastosis Neonatorum: Obstetric-Pathologic Study of Forty-Seven Cases. C. T. Javert, New York.—p. 1.

Treatment of Fresh Traumatic and Contaminated Surgical Wounds. J. D. Bisgard and C. P. Baker, Omaha.—p. 20.

Study of Mechanics of Bile Flow: I. Responses to Physiologic Intravenous Solutions. D. D. Kozoll and H. Necheles, Chicago.—p. 27.

*Clinical Studies on Antihemorrhagic Effects of New Water Soluble Vitamin K-like Substance. M. Davison, F. Steigmann and H. L. Udesky, Chicago.—p. 35.

Bacteremic Staphylococcal Infection. C. Lyons, Boston.—p. 41.

Carcinoma of Esophagus: Torek's Operation, Recovery. O. Ivanisovich and R. C. Ferrari, Buenos Aires, Argentina.—p. 47.

*Lung Injury Due to Detonation of High Explosive. J. D. King and G. M. Curtis, Columbus, Ohio.—p. 53.

Caudal Anesthesia: Its Use in Obstetrics. A. H. Lahmann and A. C. Mietus, Milwaukee.—p. 63.

Putrid Empyema. H. C. Maier, New York, and E. J. Grace, Brooklyn.—p. 69.

Mammary Carcinoma: Review of 2,636 Cases. I. Macdonald, Los Angeles.—p. 75.

Carcinoma of Colon and Rectum: Study of Metastasis and Recurrences. C. W. Mayo and C. P. Schlicke, Rochester, Minn.—p. 83.

Artificial Ileocecal Valve. J. A. Glassman, Chicago.—p. 92.

Treatment of Obstructive Hydrocephalus in Adults. J. C. White and J. J. Michelson, Boston.—p. 99.

Fine Alloy Steel Wire Sutures: Experimental and Clinical Study. Y. F. Wu and H. C. Pai, Peiping, China.—p. 110.

Peritoneal Aspiration in Diagnosis of Strangulated Bowel. T. C. Hill, B. J. O'Loughlin and M. Stoner, Omaha.—p. 121.

Edema of Pancreas. H. L. Popper and H. Necheles, Chicago.—p. 123.

Neonatal Erythroblastosis.—Javert separates neonatal erythroblastosis into hydropic, icteric, anemic, hemorrhagic and unclassified types. In his series of cases the total incidence of erythroblastosis was 1.438 and the fetal mortality caused by the disease was 3.2 per cent. Of the mothers 92 per cent were

multiparous. A high incidence of preeclamptic toxemia existed among the mothers of hydropic and icteric infants. Excessive uterine enlargement was due to the weight of the infant and the placenta and not to the hydramnios. The hydropic infants were born a month or more prematurely, whereas the icteric infants were born nearer term. Asphyxia within the uterus, after birth or during neonatal life was a prominent symptom of the fetus. Therefore, if erythroblastosis is suspected all prepartum analgesia and anesthesia is interdicted. Local infiltration can be used for an episiotomy. The incidence of postpartum hemorrhage was increased, particularly among mothers of hydropic infants. The incidence of operative delivery because of fetal distress was 56 per cent. The patient's obstetric history should replace the "family history," as the disease is not strictly familial. Parity is important, as the incidence of erythroblastosis after its initial appearance is approximately 50 per cent. If the first born had the disease, the subsequent incidence is nearly 100 per cent. Studies of the maternal blood usually gave normal results except for an increased icteric index and uric acid. The serum proteins were generally reduced. Several of the mothers were Rh negative. The infants had a high incidence of congenital anomalies. The increased number and ratio of the erythroblasts and the normoblasts in the cord blood are important diagnostic criteria. The immediate treatment of erythroblastosis is to combat asphyxia. The mortality for the hydropic infants was 100 per cent, for the icteric 54 per cent. The Buddha-like habitus of the fetus in utero seen on roentgen study is an important diagnostic feature. Paternal studies revealed that the fathers were Rh positive. The probable pathogenesis of erythroblastosis is hepatic dysfunction. Erythroblastosis runs part of its course in utero, and the obstetrician and the pediatrician are in a strategic position for antepartum diagnosis.

Antihemorrhagic Effects of Vitamin K-like Substance.

—Davison and his co-workers discuss their experience with the new water soluble vitamin K-like preparation the tetra sodium salt of 2-methyl-1, 4-naphthohydroquinone diphosphoric acid ester, or preparation N-123, in 41 patients. Most of the patients had disease of the biliary tract or the liver associated with jaundice, and a few had gastrointestinal disturbances or severe sepsis conducive to vitamin K deficiency. The prothrombin level of the blood was determined, and a daily dose of 10 mg. of the preparation was given for six days. The blood prothrombin levels were determined daily for eight days, and on the seventh and eighth days after treatment was begun the clotting time was also determined. The prothrombin level of most of the patients rose to normal limits within twenty-four to forty-eight hours after the initial dose of the preparation. After a 100 per cent level was reached it could be maintained for forty-eight to seventy-two hours without further medication unless there were fluctuations during medication. The level fluctuated when existing jaundice was aggravated or when a high fever, profuse vomiting or anorexia appeared suddenly. The rise of the prothrombin level was retarded in patients with pyloric obstruction, hepatic damage and severe sepsis and after colostomy. Patients with K avitaminosis from uncomplicated obstructive jaundice responded promptly to the daily administration of 10 mg. of preparation N-123. Patients with hepatic damage interfering with vitamin K storage and utilization and those with sepsis and pathologic changes in the gastrointestinal tract responded less promptly, less completely and for a shorter period.

Injury to Lung from Detonation of High Explosive.

—King and Curtis describe the effects on the body of the detonation of a high explosive, particularly on the pulmonary system, and compare them with those observed in civilian life in peace time. Explosives are of two types: low and high. Low explosives have explosion velocities of a few thousand or less feet per second in contrast to high explosives, which have velocities of 5,000 to 25,000 feet. At every point in the immediate neighborhood the detonation of a high explosive sets up a momentary wave of high pressure and then a negative "suction" pressure, owing to the fact that the positive compression wave reduces the density of the air behind it to below normal atmospheric pressure. The wave of pressure is highest in the immediate region of the explosion and falls off rapidly as it moves away. The prime characteristic of a detonation is that whereas

the disturbance moves forward the objects through which it travels do not move with it but oscillate backward and forward. Thus the violence of a blast can bruise the walls of the lung as if they had been struck by a solid object. The pulmonary damage from the detonation of a high explosive is characterized by alveolar rupture and hemorrhage. Examination of persons killed by explosion (without obvious external injury) may reveal a tear of the lung or a bulbar hemorrhage, or in those who live for a time the meningeal vessels may be ruptured and the viscera may be lacerated. The results of experimental studies confirm the clinical and postmortem observations that pulmonary lesions predominate and substantiate the view that the lesions are due to the impact on the thoracic wall of the pressure component of the blast wave. Lesions of the central nervous system also may be produced by a blast. The mechanism responsible for the cerebral lesions has been explained as due to the hydraulic-like pressure that develops from the sudden compression of the thoracic cage and the consequent violent back pressure on the venous side. The pulmonary injury may be prevented by the use of air raid shelters, ditches, holes and gutters, by just lying flat on the ground in the prone position (the back of the thorax yields less to injury than the front part) or by covering the chest with sponge rubber or some similar material. The early recognition of the injury is of prime therapeutic importance. Complete rest is imperative, and judging from the condition of the lungs at necropsy and clinically from the embarrassed breathing every effort should be made to avoid any additional trauma to the lungs. Oxygen therapy may be worthy of more extensive use. The awareness that such damage may occur should stimulate all physicians to look for it among air raid casualties.

Surgery, St. Louis

11:169-332 (Feb.) 1942

- *Myeloscropy: Intraspinial Endoscopy. J. L. Pool, New York.—p. 169.
- Fractures of Maxilla: Describing a Simplified Appliance for Cranio-maxillary Support and Fixation. C. W. Waldron and S. G. Balkin, Minneapolis.—p. 183.
- Some Observations on Quick Hippuric Acid Test in Hepatic Function. D. A. Campbell, Ann Arbor, Mich.—p. 195.
- Postoperative Cholorrhea: Report of Case, with Profound Peripheral Circulatory Collapse (Shock) Due to Excessive Loss of Fluid and Electrolytes Through T Tube. F. R. Keating Jr., Marschelle H. Power and J. T. Priestley, Rochester, Minn.—p. 198.
- *Hemangioma of Liver: Discussion of Symptomatology and Report of Patient Treated by Operation. H. B. Shumacker Jr., Baltimore.—p. 209.
- Splenectomy: Method of Mobilizing Spleen in Presence of Dense Adhesions. J. D. Rives, New Orleans.—p. 223.
- Welch Bacillus Infections Arising from Stomach and Duodenum. W. C. Quinn, J. W. Lord Jr. and L. J. Wade, New York.—p. 229.
- Gas Gangrene of Abdominal Wall. W. C. Quinn, J. W. Lord Jr. and L. J. Wade, New York.—p. 233.
- Peritonitis: III. Studies in Peritoneal Protection, with Particular Reference to Action of Sulfonamide Drugs in Experimental Peritonitis. H. D. Harvey, F. L. Melency and J. W. R. Rennie, New York.—p. 244.
- *Exudative Interstitial Nephritis (Pyelonephritis). E. T. Bell, Minneapolis.—p. 261.
- Observations on Distribution and Transport of Gas in Gastrointestinal Tract of Infants and Young Children. J. R. Paine and C. B. Nessa, Minneapolis.—p. 281.
- Cystic Degeneration of Ovaries: Experimental Study. J. C. Weed and C. G. Collins, New Orleans.—p. 292.

Myeloscropy.—Pool states that since the principle of intraspinal endoscopy, adapted to the diagnosis of lesions affecting the cauda equina and the lowermost portion of the spinal cord, was suggested four years ago nearly 400 "myeloscopic" examinations have been done. The instrument devised for the purpose may be introduced between lumbar spinous processes in much the same manner as a lumbar puncture needle. Trauma to nerve roots has not ensued. The conditions to be recognized by myeloscropy are varicose vessels, arachnoid adhesions of post-traumatic or postinflammatory origin, neoplasms, inflamed nerve roots associated with neuritis and herniated nucleus pulposus or hypertrophied ligamentum flavum. Despite the loss of 5 to 15 cc. of cerebrospinal fluid during myeloscropy, the incidence of postpuncture headache has not been any greater than that which follows a lumbar puncture. The explanation for this may be that the procedure is carried out with the patient in the upright position so that intracranial dynamics accommodate themselves as the spinal fluid flows out. Myeloscropy has revealed large collections of epidural fluid two

four days after lumbar puncture, demonstrating that spinal fluid can continue to leak for some time after a lumbar tap. Therefore, myelography should be delayed for at least five days after a lumbar puncture has been done; otherwise the procedure may be difficult, as the hydrostatic tension of the dural and arachnoid membranes will have been lost as a result of the leak. Myelography has not yet been performed over the spinal cord, although it was done successfully within the cisterna magna of an anesthetized dog. The myeloscope has been used for intra-ventricular visualization through trephine openings in the human skull, and attempts are now in progress to study action currents from the nerve roots of the cauda equina. Myelography will aid in the differential diagnosis of operable and inoperable lesions of the cauda equina and the lower portion of the spinal cord. It may often rule out post-traumatic malingering. The necessity of injection of iodized oil and exploratory laminectomy may be obviated by preliminary myelography. Inoperable conditions depicted by myelography are various types of varicose veins of the cauda equina, arteriosclerosis of the spinal cord and metastatic neoplasms.

Hemangioma of Liver.—Shumacker encountered a large hepatic hemangioma during a laparotomy which required the decision whether it was the cause of the patient's symptoms and whether resection would relieve the distress. He reviews 66 similar cases reported in the literature. The tumor of 56 of the 67 patients was resected. The youngest patient was 6 years old and the oldest 76. Fifty-one of 62 patients on whom data are available were females. The initial complaint of the patients was of a mass in the epigastrium or of some equivalent symptom. Other complaints were weakness, evening fever, slight local discomfort, a sense of weight, fullness or pressure in the upper part of the abdomen, dysmenorrhea, dysuria, pain in the back of the legs and severe or mild epigastric pain. Nausea, vomiting and anorexia were common. In 3 in whom the hemangioma ruptured, the illness was of short duration and suggested acute appendicitis, ruptured tubal pregnancy or peritonitis. In most of the others the complaints were chronic, beginning in some instances ten or twenty years before operation. The average duration of symptoms was nearly five years. In 54 an epigastric tumor was palpable at the time of operation. The symptoms of only 7 suggested disease of the gallbladder or of the biliary tract. On palpation nothing characteristic was observed about the tumor. The correct preoperative diagnosis was made on only 2 patients. Only 1 of the 56 patients operated on died. Various procedures were employed. Adequate mobilization of the liver, through division of the ligamentous attachment to the diaphragm and temporary compression of the hilar structures, is helpful in controlling bleeding. The tumor should never be cut into nor should it be aspirated. The real danger associated with hemangioma of the liver is rupture of the tumor. In bleeding from a hemangioma better results may be expected from resection than from packing. There were 5 deaths among the 11 patients whose tumor was not removed. Contributing factors were spontaneous rupture of the tumor before, during or after operation or bleeding from tapping or incising the tumor at operation. Two patients were treated successfully with the roentgen ray; 1 had an inoperable tumor of the right lobe and the other a tumor in the right lobe several months after a hemangioma of the left lobe had been resected. In general, most of the patients were relieved of their complaints after the tumor had been resected.

Exudative Interstitial Nephritis.—Bell states that in subjects seen at necropsy the obstructive form of pyelonephritis is about twelve times as frequent as the nonobstructive type. The age and sex distribution corresponds with that observed in hydronephrosis. The symptoms are usually overshadowed by those of hydronephrosis. Renal infection is present at necropsy about twice as often (61 to 83 per cent) in obstruction of the lower portion of the urinary tract as in ureteral obstruction above the bladder (23 to 46 per cent). The incidence of chronic hypertension in hydronephrosis is not greater than that in a control population of corresponding age. Cortical abscesses are frequently seen post mortem, but only 40 typical instances of acute nonobstructive pyelonephritis were observed among more

than 32,000 necropsies. Only 14 examples of chronic bilateral nonobstructive pyelonephritis were encountered. The available evidence indicates that this disease seldom causes chronic hypertension. The blood pressure of 5 patients has been reported to remain normal for more than one year after a unilateral nephrectomy for chronic atrophic pyelonephritis. Therefore there may be some other explanation for the success of the treatment in these cases, since many failures have been observed. In unilateral renal ischemia produced by Goldblatt's method the blood pressure returns to normal if the ischemic kidney becomes severely atrophic. The thick walled arteries in atrophic pyelonephritis represent disuse atrophy and not primary vascular disease.

Tennessee State Medical Assn. Journal, Nashville

34:463-506 (Dec.) 1941

Lesions of Cervix. W. L. Williamson, Memphis.—p. 463.

Pioneer Physicians and Medicine in Middle Tennessee. T. V. Woodring, Nashville.—p. 469.

35:1-38 (Jan.) 1942

*Formation and Use of Plasma. M. Semoff, Chattanooga.—p. 1.

Alcoholism: Some "Causes" and Treatment. M. Moore, Boston.—p. 3.

Practical Treatment of Cardiac Arrhythmias. J. A. Kennedy, Nashville.—p. 13.

Endocrine Therapy in Obstetrics and Gynecology. J. C. Burch and G. E. Kinzel, Nashville.—p. 17.

Formation and Use of Plasma.—Semoff believes that a practical and simple method of preparing and storing blood plasma in a small hospital or clinic is the Baxter vacuum technic. A series of 500 cc. flasks, containing the proper diluents and a partial vacuum, a machined valve, needles and a donor are all that is needed. The entire system is a closed one, safeguarded by rubber vacuum seals. Merthiolate is added as an extra precaution. A further technic for diluted plasma makes use of a 1,000 cc. flask which contains 500 cc. of an anticoagulating diluent. The initial donors will have to be volunteers, but thereafter blood should be replaced as it is drawn. Diluted stored plasma will answer almost all needs. However, for increased intracranial pressure undiluted plasma is best. The cost, discounting labor, is about one-tenth that of commercial human plasma. The small hospital or clinic with no added personnel can easily prepare its own plasma for its needs.

Union Médicale du Canada, Montreal

71:1-110 (Jan.) 1942. Partial Index

*Present Treatment of War Wounds. G. Gordon-Taylor, London, England.—p. 11.

*Duodenal Achalasia: Clinical, Radiologic and Therapeutic Considerations. A. Cantero and A. Jutras, Montreal.—p. 16.

Several Aspects of Nephritis. R. Dandurand, Montreal.—p. 29.

Syndrome of Gradenigo or of the Petrosal Apex in Course of Suppurating Otitis. R. Amyot and J. Braby, Montreal.—p. 34.

Calculus Cholecystitis in Child. C. Bisson, Montreal.—p. 45.

Spinal Anesthesia. R.-E. Senecal, New Bedford, Mass.—p. 48.

Present Treatment of War Wounds.—Gordon-Taylor states that wounds caused by bomb fragments are produced not only by metal but by glass splinters, fragments of wood, pieces of stone and debris. The rarity with which gas gangrene has been encountered in this war is in striking contrast to its frequency during World War I. The débridement practiced now is not more thorough than it was then. The use of the sulfonamide derivatives and of plaster casts to insure complete rest is probably the important factor. Antigangrene serum is administered not in a routine manner but only to persons with severe wounds especially susceptible to gas infection, such as wounds of the buttocks, the perineum and the calf muscles. Secondary hemorrhages constitute a serious problem, but in the author's experience they were rare. Tetanus was extremely rare because of immunization. Burns have been a frequent lesion during this war. Treatment by coagulation is indicated for extensive burns of the body; it is definitely contraindicated for burns of the hands and the face. For the latter saline dressings, sulfonamide derivatives and tulle gras are most frequently used. Lesions caused by mines, which involve chiefly the lower extremities, are frequent in the navy. The calcaneum

is particularly vulnerable. All bones of the lower leg may be fractured, and dislocation of the knee is not rare. Compression fracture of the first lumbar vertebra is encountered after mine explosions; every patient who complains of a pain in the back should be subjected to roentgenoscopy. Abdominal injury is particularly likely to be produced by small fragments of bombs. The value of abundant transfusions of blood or its derivatives in grave shock has been demonstrated. Blast injury of the lung is characterized by expectoration and by distention of the lower part of the thorax. The typical abdominal lesions of blast are retroperitoneal hematoma, perirenal extravasation and intermesenteric encircling of the intestinal wall. MacWilliams called attention to "blast by immersion." It is observed in shipwrecked persons exposed to detonations in the surrounding water and may result in rupture of the small intestine, of the cecum or of the ascending colon. Some patients with lesions of this type have been known to survive after operation.

Duodenal Achalasia.—Cantero and Jutras classify duodenal dyskinesias as mechanical and functional. The term achalasia was first applied by Hurst to the deficient relaxation of the sphincters. Two groups of symptoms may be present: those caused by stasis and those resulting from autointoxication. Stasis and dilatation manifest themselves in a sense of fullness and of epigastric distention during or shortly after a meal. The distention may develop into a severe pain and may be followed by vomiting, prostration and headache. Among the consequences of duodenal autointoxication, attacks of migraine take the first place. They may cause the patient to abstain from food, with resulting emaciation and weakness. The malnutrition reacts on the mental state. Although anxiety, emotional stress, prolonged chagrin and intellectual overwork often elicit the syndrome, the psychic effects of malnutrition likewise influence the character. The incidence of duodenal stasis is comparatively high. Although the authors detected duodenal achalasia in children 9 and 11 years of age the disorder is rare in children. It is frequent in the aged and the middle aged and is somewhat more frequent in women than in men. It progresses in bouts that last from several weeks to several months, in the course of which the subject becomes pale or yellowish and loses weight, strength and control of the nerves. The resulting reduction in resistance involves the threat of intercurrent infections. Surgical treatment rarely produces satisfactory results. Medical treatment, if carried out faithfully, is, as a rule, effective. It includes provision for a diet rich in proteins, carbohydrates, mineral salts and vitamins, mental and physical relaxation such as may be obtained by life in the open air, drainage and lavage of the duodenum repeated two or three times a week for several months, and medication to establish vagosympathetic equilibrium, especially with acetylcholine and prostigmine.

War Medicine, Chicago

2:1-192 (Jan.) 1942

*Diagnosis, Treatment and Prevention of Meningococcic Meningitis, with Résumé of Practical Aspects of Treatment of Other Acute Bacterial Meningitides. J. H. Dingle and M. Finland, Boston.—p. 1.

*Local Chemotherapy of Experimental Gas Gangrene. G. B. Reed and J. H. Orr, Kingston, Ont., Canada.—p. 59.

*Treatment of Experimental Gas Gangrene with Zinc Peroxide. G. B. Reed and J. H. Orr, Kingston, Ont., Canada.—p. 79.

Treatment of Experimental Gas Gangrene with Plaster Immobilization and Chemotherapy. G. B. Reed and J. H. Orr, Kingston, Ont., Canada.—p. 83.

*Antigenic Value of *Clostridium Perfringens* (*Clostridium Welchii*) Toxoid in Prevention of Gas Gangrene. Sarah E. Stewart, Bethesda, Md.—p. 87.

Medical Aspects of Selective Service System: II. Follow-Up Study. M. S. Saslaw and C. S. Junkermann, Camp Shelby, Miss.—p. 99.

Development of Equipment for Administration of Dried Plasma in Armed Forces. M. Strumia, Bryn Mawr, Pa.; L. R. Newhouser, D. B. Kendrick Jr., Washington, D. C., and J. J. McGraw, Bryn Mawr, Pa.—p. 102.

Analysis of 373 Cases of Acute Craniocerebral Injury. C. Pilcher and R. Angelucci, Nashville, Tenn.—p. 114.

Meningococcic Meningitis.—Dingle and Finland review the present status of the prevention, diagnosis and treatment of acute bacterial meningitis. Epidemics which occurred during the last world war are prevalent in some countries today and may in the near future become widespread in the armed forces

or the civilian population of this country. Every patient with meningitis represents an individual problem and should be in the hands of one physician during the entire course of his illness. The diagnostic aids and procedures are the clinical history, physical examination, blood culture, hematologic examination, cultures of miscellaneous material, the determination of the nonprotein nitrogen of the blood, urinalysis and lumbar puncture performed as soon as possible under strict surgical asepsis, determination of the initial pressure, determination of the dynamics of the cerebrospinal fluid, chemical analysis of the cerebrospinal fluid and the blood, cytologic study and bacteriologic isolation. The treatment of meningococcic meningitis consists in the institution of chemotherapy immediately after the presence of organisms is known, the correction of dehydration by administering isotonic solution of sodium chloride with or without dextrose, specific serum therapy to supplement chemotherapy, the treatment of focal infections, the utilization of laboratory aids (determination of the level in the blood and cerebrospinal fluid of the drug administered, the hemoglobin concentration, blood counts and cultures) for the control, change or withdrawal of therapy and symptomatic and supportive treatment. The convalescent period should be about one month after complete recovery and longer if the illness was severe and protracted. In the management of a patient with a relapse or a recurrence the differential diagnosis should include a concomitant infection, infection at another focus caused by the original organism, drug fever and serum sickness. A lumbar puncture, with complete examination of the cerebrospinal fluid as after the initial puncture, should be performed, the total and differential erythrocyte counts should be repeated and treatment as for an initial infection should be resumed if indicated.

Experimental Gas Gangrene.—Reed and Orr controlled experimental gas gangrene in guinea pigs after inoculating them with ten times the minimal lethal dose of *Clostridium welchii*, *Clostridium septicum*, *Clostridium novyi* or *Clostridium sordelli* or with a mixture of one or more of these and *Clostridium sporogenes* or *Clostridium histolyticum* by local therapy with one of the sulfonamide derivatives. Infection caused by *Cl. welchii* responded most readily to chemotherapy. Infections caused by *Cl. septicum* and *Cl. novyi* were somewhat more resistant, and those caused by *Cl. sordelli* were definitely resistant to chemotherapy. In the order of increasing effectiveness the drugs tested were sulfanilamide, sulfacetamide, sulfaguanidine, sulfapyridine, sulfamethylthiazole, sulfadiazine and sulfathiazole. The superiority of local to oral treatment is more definite with the less efficient than with the more efficient drugs.

Zinc Peroxide for Experimental Gas Gangrene.—Reed and Orr observed that the introduction of zinc peroxide into wounds of guinea pigs into which ten fatal doses of *Clostridium welchii*, *Clostridium septicum*, *Clostridium novyi* or *Clostridium sordelli* previously had been injected resulted in a high percentage of recoveries and a prolongation of the survival time among guinea pigs with a fatal infection. Zinc peroxide was slightly less effective than sulfathiazole in the treatment of wounds in which gas gangrene infection had become established before therapy was instituted.

Prevention of Gas Gangrene.—Stewart outlines a method for concentrating *Clostridium perfringens* toxoid which she has successfully used in the prophylaxis of gas gangrene. Her evidence is based on the results obtained with 54 guinea pigs given injections of the toxoid. The serum of only 7 of them showed 0.25 unit of antitoxin or more per cubic centimeter. One month after the last injection of toxoid each guinea pig was inoculated intraperitoneally with one to four minimal lethal doses of a *Cl. perfringens* culture. None of the animals survived except those which showed antitoxin in the serum by mouse titration. When ten to thirty minimal lethal doses of culture were injected intramuscularly into an immunized guinea pig only a localized infection frequently resulted. The low antigenicity of the toxoid may be due to a loss of some antigenic factor during filtration. Since the lethal toxin can be concentrated many times by this process, it may be that other factors are necessary to produce a good antigen and that these are lost in filtration.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

16:211-274 (Dec.) 1941

Infantile Diarrhea and Vomiting. R. M. Campbell and A. A. Cunningham.—p. 211.

Shock in Newborn Infant. R. A. Miller.—p. 230.

Secretion of Urine by Premature Infants. W. F. Young, J. L. Hallum and R. A. McCance.—p. 243.

*Familial Renal Dwarfism. S. Graham and J. H. Hutchinson.—p. 253.

Familial Renal Dwarfism.—Graham and Hutchinson report 3 and probably 4 instances of renal dwarfism that occurred among 8 live-born children. Both parents are healthy. A history of renal disease on either side of the family was not present. The 4 instances occurred in successive pregnancies in the middle of the mother's childbearing life. No information is available with regard to the underlying pathologic changes, as permission for postmortem was not granted for the 2 patients seen by the authors, the third patient died some time before and the fourth patient is apparently well but still small. As usual, hypertension was not present nor were casts found in the urine. Because of these features it has been suggested that renal dwarfism is more often due to congenital hypoplasia of the kidneys than to chronic nephritis. Coplin has suggested that the renal hypoplasia might be due to defective arteriogenesis with a consequent defective development and a scarcity of secretory units. Such an inherent fault in the germ plasma might explain the familial incidence.

British Journal of Experimental Pathology, London

22:293-316 (Dec.) 1941

Inhibition of Bacterial Growth by Indoleacrylic Acid and Its Relation to Tryptophan: Illustration of Inhibitory Action of Substances Chemically Related to Essential Metabolite. P. Fildes.—p. 293.

Sarcoma Produced by Subcutaneous Injections of Overheated Cottonseed Oil into Mice. S. Beck.—p. 299.

*Occurrence of Influenza B in Southern England. Dora Lush, C. H. Stuart-Harris and C. H. Andrewes.—p. 302.

Modification of McIntosh and Fildes's Anaerobic Tin. R. E. B. Hudson.—p. 305.

Experiments with Renin. R. W. Scarff and N. H. Martin.—p. 309.

Influenza B in Southern England.—Lush and her associates tested against influenza B virus all the serums available from the 1939 epidemic of influenza in England, including serums known to have shown a rise in titer against influenza A virus. The rise in titer in the 8 serums positive to the B strain of the virus was respectively 600, 150, 150, 100, 50, 40, 20 and 10 fold. Influenza caused by the B virus was widespread not only during the early part of 1939 but throughout the whole epidemic period. It occurred in two of the institutions investigated at the same time as an outbreak of influenza A, and clinically it was not distinguishable from virus A infection. No serum showed an antibody rise against both the A and the B virus. The serum of about half of the patients showed no rise in antibody against either virus, and consequently the authors assume that in these patients the disease was due to an as yet unknown agent.

British Medical Journal, London

2:865-896 (Dec. 20) 1941

Duodenal Intubation: Significance of Cellular Contents of Bile in Diagnosis of Diseases of Biliary Tract. A. Fidler, J. Innes and L. S. P. Davidson.—p. 865.

Observations on Some Normal and Injurious Effects of Cold on Skin and Underlying Tissues: III. Frostbite. T. Lewis.—p. 869.

*Experimental Study of Wounding Mechanism of High Velocity Missiles. A. N. Black, B. D. Burns and S. Zuckerman.—p. 872.

Blood Pressure Raising Reflexes in Hysterical Anesthesia. J. V. Cable and F. H. Smirk.—p. 874.

Temporary Vascular Occlusion Ending Fatally in Uremia. A. M. Glen.—p. 875.

Wounding Mechanism of High Velocity Missiles.—According to the investigation carried out by Black and his colleagues on rabbits and on blocks of 20 and 5 per cent gelatin into which a cordite charge (a $\frac{3}{32}$ inch steel ball weighing 53 mg.) was fired at velocities varying from 500 to 5,000 feet per second, it appears that the disproportionate degree of

tissue destruction caused by small high velocity bomb splinters is due to the fact that particles lying in their path are thrown radially with sufficient violence to leave a central cavity around which tissues at some distance from the track are momentarily stretched. While blood vessels are usually elastic enough to experience this strain without anatomic and functional injury and nerves without obvious anatomic injury, bones are often broken at some distance from the track.

Journal of Hygiene, London

41:345-462 (Dec.) 1941

Ecology of Bedbug, *Cimex Lectularius* Linnaeus, in Britain: Report on Research, 1935-1940. C. G. Johnson.—p. 345.

Journal of Laryngology and Otology, London

56:377-414 (Nov.) 1941

Otogenous Meningitis: Intrathecal Administration of Sulfonamide. C. A. Hutchinson.—p. 377.

Traumatic Paraesophageal Cellulitis: Case. D. B. Kelly.—p. 387.

Cerebrospinal Puncture and Air Replacement for Otosclerosis. E. R. G. Passe.—p. 389.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

48:685-768 (Dec.) 1941

Persistent Functional Corpus Luteum. J. Black, O. S. Heyns and J. Gillman.—p. 685.

Diabetes Mellitus and Pregnancy. H. H. F. Barns.—p. 707.

Renal Function Tests in Normal and Toxemic Pregnancy. Vera I. Krieger and Nanette Norris.—p. 726.

Differential Diagnosis of Vaginitis in Menopausal Women. H. C. McLaren.—p. 742.

Meigs's Syndrome (Ovarian Fibroma with Ascites and Hydrothorax): Report of Case. C. Borg.—p. 750.

Unusual Case of Carcinoma of Cervix. S. Way and J. Simpson.—p. 753.

Lancet, London

2:751-782 (Dec. 20) 1941

*Pfeiffer's Bacillus (Influenzal) Meningitis. N. Mutch.—p. 751.

Pfeiffer's Bacillus Meningitis: Recovery with Chemotherapy. N. M. Jacoby.—p. 753.

Photoelectric Method of Estimating Hemoglobin. D. K. Hill and A. C. Pincock.—p. 754.

*Treatment of Bedclothes with Dust Laying Oils: Use of Oil in Water Emulsions. M. van den Ende and J. C. Thomas.—p. 755.

Hyperchromic Anemia in Infant: Response to Liver Extract. L. Crle.—p. 759.

Pfeiffer's Bacillus (Influenzal) Meningitis.—Mutch states that influenzal meningitis due to Pfeiffer's bacillus, which is comparatively uncommon in England, has been observed in 3 patients and probably in 2 others since August 1941. England's comparative immunity, the author suggests, may be due to a higher individual resistance to Pfeiffer's bacillus acquired in the land of the common cold. In America the bacilli are described as being numerous. In the author's patients the bacilli were so few that they might easily have escaped notice. The disease may possibly be overlooked sometimes when laboratory facilities are inadequate. The organism often is not seen or fails to grow from cerebrospinal fluid from patients with suppurative meningitis. There is a tendency to ascribe this failure to death of the bacteria during transport of the specimen or to administration of sulfonamide derivatives before the fluid is collected, but it is conceivable that the group of cases in which culture is unsatisfactory may include a proportion of cases of influenza.

Dust Laying Oils for Bedclothes.—The possible importance in preventing the spread of infection and the relative simplicity of treating bedclothes with liquid petrolatum have caused van den Ende and Thomas to find substitutes for liquid petrolatum, which in the quantity necessary is expensive, and to simplify the method of application. The shortage of paraffinum liquidum British Pharmacopoeia has led to the introduction of paraffinum liquidum leve British Pharmacopoeia. This is a highly refined, inert petrolatum oil with a lower density and viscosity than the original oil and represents the most refined type of what are known technically as white oils. These white oils are available in considerable quantities, and the authors have used one which differs from the new British Pharmacopoeia product only in that it has a higher acid value. Unlike refined yellow spindle oils, the white oils are not carcinogenic. All

the white oils tested have proved to be efficient dust layers. The fact that these oils, with the aid of suitable wetting and emulsifying agents, result in centrifuge stable emulsions with water overcomes the original difficulty of applying an organic solvent and makes mass treatment of bedclothes a practical possibility in hospital laundries. Furthermore, the emulsifiers used are bactericidal under natural conditions, especially against wet organisms, as those in moist droplets. Bedclothes are thoroughly soaked in a 20 per cent water solution of the oil, spun in a hydroextractor and then dried in the hot air drying chamber. Bedclothes treated with the soluble oils not only retain most of the organisms within the actual fabric but also kill the organisms in droplets before they dry. The use of the soluble oils in hospital trials resulted in a 99 per cent reduction in the number of organisms liberated during bed making.

Medical Journal of Australia, Sydney

2:635-660 (Dec. 6) 1941

- Recent Developments of Knowledge of Liver Function and Behavior. R. D. Wright.—p. 635.
Tuberculin Patch Test. J. H. Colebatch.—p. 640.
Patch Test: Simple Tuberculin Test for General Medical Practice. D. Anderson.—p. 645.
Diagnosis of Intraventricular Hemorrhage. R. S. Steel.—p. 647.

Practitioner, London

148:1-64 (Jan.) 1942

- Pneumonitis or Virus Pneumonia. W. T. Longcope.—p. 1.
Modern Views on Pneumonia and Its Treatment. M. Davidson.—p. 9.
Chronic Bronchitis in the Elderly. F. A. Roper.—p. 18.
Rickets in War Time: Its Prevention and Treatment. Helen M. M. Maekay.—p. 25.
Measles and Whooping Cough: Prevention and Treatment. E. H. R. Harries.—p. 32.
Prevention and Treatment of Frostbite. R. Greene.—p. 38.
Vitamin C: Its Sources, Properties and Requirements. Cecile Asher.—p. 44.
Minor Surgery: VII. Bursas and Ganglions. H. J. Burrows.—p. 50.

Schweizerische medizinische Wochenschrift, Basel

71:1409-1436 (Nov. 8) 1941. Partial Index

- Alzheimer's Disease and Pick's Disease. A. Favre.—p. 1409.
*Treatment of Cavernous Pulmonary Tuberculosis with Suction Drainage of Cavities. A. Schubert.—p. 1412.
Relation Between Sugar Absorption and Phosphate Metabolism: Secretion of Phosphorus into Intestinal Lumen During Absorption of Monosaccharides. L. Laszt and L. Dalla Torre.—p. 1416.
Studies on Efficacy of Various Methods of Room Disinfection by Means of Formaldehyde-Water Vapors and Paragerm (Mixture of Phenyl-Oxy-Benzocate and Para-Iso-Propyl-Metacresol-Benzocate) Vapors. B. Fust.—p. 1425.
Chronic Alcoholism and Suicide: Bandel's Theory of Influence of Alcoholism on Incidence of Suicide. Z. Shimshony.—p. 1429.

Suction Drainage of Pulmonary Cavities.—Schubert suggests that immunobiologic states and mechanical factors play a part in the varying healing tendencies of tuberculous cavities. The cavernous wall and its surroundings, the air pressure inside the cavity and the behavior of the draining bronchus are important mechanical factors. The production of a continued negative pressure in the tuberculous cavity, such as is produced by Monaldi's suction drainage, promotes its shrinkage. By removing the toxic contents, suction drainage also cleanses the cavernous walls. As a result coughing decreases, bacilli disappear from the sputum and the cavity, the toxicity diminishes and the general condition improves. Among the indications for Monaldi's suction drainage the author stresses that there must not exist a free pleural space corresponding to the region of the cavity. The presence of even a small pleural space results in the formation of empyema. It is therefore essential to make careful attempts at pneumothorax, and only after adhesion is absolutely certain can suction treatment be started. If the pleural space is only partially free, an attempt can be made to obliterate it by the introduction of talcum. The author found this procedure helpful in a number of cases as a preparation for suction drainage. A fairly good immunobiologic equilibrium is also desirable. Fever bouts should have subsided. It may be desirable first to subject the patient to sanatorium treatment. Experience has demonstrated that the danger of complications is comparatively slight. The author employed the treatment in 56 cases. The time elapsed is too

short to permit evaluation of the permanent results. Suction drainage is a valuable addition to the treatment of tuberculous cavities. When it alone does not produce a permanent cure, it puts the patient into a better condition for a subsequent thoracoplasty. Suction drainage makes thoracoplasty possible in some cases in which it would otherwise have been impossible.

Anais Brasileiros de Ginecologia, Rio de Janeiro

12:441-524 (Dec.) 1941. Partial Index

- *Value of Artificial Estrogens in Gynecologic Disease. N. Arenas.—p. 441.

Synthetic Estrogens in Gynecologic Disease.—Dichylstilbestrol, according to Arenas, produces estrus in spayed animals and proliferation of the endometrium, enlargement of the breasts and similar phenomena in menopausal or castrated women. The drug is twice as strong as natural estrogens. It can be administered by mouth and is less expensive than the natural estrogens. It should be taken in milk to prevent gastric symptoms. The author obtained satisfactory results in a large number of patients with menopausal symptoms, hypogonadism, vulvar pruritus and cessation of milk secretion and in young girls and old women with vaginitis. The daily dose varied from 1 to 2 mg. of the substance up to a total of 80 mg. It is advisable to stop the treatment when symptoms are almost under control and either to repeat after a moderate period of rest or to administer the substance in smaller doses and at longer intervals.

Archivos de Pediatría del Uruguay, Montevideo

12:767-830 (Dec.) 1941

- Tuberculosis in Children: Significance of Heredity and Contagion. P. de Elizalde.—p. 767.
Decapitation of Superior Epiphysis of Humerus Caused by Obstetric Trauma. R. J. Caritat and E. Peluffo.—p. 785.
*Seven Years' Experience with Diabetes Mellitus in Children. Maria Luisa Saldún de Rodríguez.—p. 796.
Nicolas-Favre's Disease in Child of Eighteen Months. V. Pereira and J. V. Gil.—p. 812.

Diabetes in Children.—Saldún de Rodríguez reports observations lasting seven years on 57 children with diabetes mellitus. The course of diabetes in the child is determined by two groups of factors: (1) physiologic factors involving growth, development, glycemic instability and the glands of internal secretion and (2) treatment, which is concerned with diet, the use of insulin, adjuvant medication, hygienic care and social protection. The dietetic treatment is fundamental. The most effective diet is one which is rich in carbohydrates and in which the ratio of antiketogenic to ketogenic substances is kept at 2 or more. The quantity of proteins and the caloric value should correspond to the requisites for healthy children. The menu should be individualized and as far as possible adjusted to the taste of the child and to the economic status of the family. Insulin therapy is indispensable for the child; without it the course of the disease will always be unfavorable. At first insulin should be given in a quantity sufficient to metabolize all the diet and to maintain a humoral equilibrium. Later, in cases of evident improvement, the amount can be gradually diminished and some of the injections omitted, but the humoral equilibrium must always be maintained. The author employed ordinary insulin because it is easier to manage and does not produce nocturnal hypoglycemia. Liver therapy produced favorable results in hepatomegaly and in nocturnal hyperglycemia; ovarian, testicular and hypophyseal therapy are useful in the prepuberal period. Therapy with vitamins B₁ and D and calcium was employed. Social protection is an important factor; it comprises instruction of the family, prevention of the development of an inferiority complex and collaboration with the teacher and the visiting nurse. If correct treatment is given, clinical normalization of the secretory equilibrium, of the metabolism and of physical and intellectual growth can usually be obtained in the diabetic child. Disturbances in the sexual sphere, such as delayed puberty or menstrual disturbances, are comparatively frequent but can be ameliorated or corrected by endocrine therapy. It is much more difficult to establish a humoral equilibrium in a child in whom it has been neglected for a long time than in a child who has been correctly treated from the beginning.

Revista Cubana de Cardiología, Havana

2:299-388 (Sept.-Dec.) 1940. Partial Index

*Therapy of Chronic Arterial Hypertension by Large Doses of Vitamin A. J. Govea Peña and M. Villaverde.—p. 332.

Vitamin A in Chronic Arterial Hypertension.—Govea Peña and Villaverde administered vitamin A to 65 patients with chronic hypertension. Administration of 180,000 units of vitamin A for several days resulted in lowering of the blood pressure 30 to 40 mm. of mercury. After this 90,000 units was given daily for several months. Lowering of the blood pressure frequently took place during the first forty-eight hours. In all cases, symptoms of hypertension diminished early in the course of the treatment. Headache generally disappeared within the first forty-eight hours. The symptomatic and functional improvement continued long after the treatment had been discontinued. None of the 65 patients were treated by any special rest different from that which they had in the course of previous treatments, which had failed. The only 4 whose treatment was a failure had malignant arterial hypertension. Vitamin A given in large doses has a considerable hypotensive effect. The vitamin is best administered by mouth; intramuscular injections give rise to inflammation in about 90 per cent of cases.

Rev. d. Inst. Salub. y Enferm. Trop., México, D. F.

2:129-256 (Sept.) 1941. Partial Index

*Artificial Active Immunization Against Typhoid and Paratyphoid A and B with Only One Dose of Typhoid and A and B Paratyphoid Vaccines Precipitated with Alum. A. P. León, F. Escarza and E. Rabasa.—p. 161.

Active Immunization Against Typhoid and Paratyphoid A and B.—León and his colleagues found that alum has a bactericidal effect on salmonellas of the typhoid and paratyphoid groups and precipitates them; a given dose of precipitated typhoid or paratyphoid bacteria immunizes animals with greater immunity than that which is produced by three times the same dose of nonprecipitated bacteria. They prepared a vaccine with typhoid and A and B paratyphoid bacteria which was precipitated with alum. The vaccine was administered to several hundred persons in one dose of 1 cc. containing 1,000 million typhoid bacteria and 500 million each of paratyphoid A and B bacteria. The O, H and Vi agglutinins and protecting antibodies were determined in the blood serum before and after vaccination by the mouse protection test. A single dose of the alum precipitated vaccines gave immunity as high or higher than that produced by three doses of the standard vaccines. The local and general reactions caused by the alum precipitated vaccine are almost equal to those caused by one of the three doses of the standard vaccine and are not considered a contraindication to its use in individual or mass immunization.

Archiv für klinische Chirurgie, Berlin

199:559-666 (Dec. 23) 1940

*Solitary Xanthoma of Bone. H. Puhl.—p. 559.
Pathologic Bone Fractures as Sequels of Sport Injury. P. von Puky.—p. 587.

*Struma Suprarenalis Cystica Hemorrhagica. C. H. Schröder.—p. 595.
Attempted Conservative Treatment of Spontaneous Gangrene. D. Pančenko.—p. 607.

Perthes' Disease and Coxa Vara. S. Nagura.—p. 613.
Neurinoma of Cauda Equina. K. Kratochvil.—p. 619.

*Influence of Surgical Trauma on Venous Blood Pressure. P. Ollinger.—p. 628.

Solitary Xanthoma of Bone.—According to Puhl, localized xanthoma of bone occurs in solid or cystic form, and in its clinical behavior and microscopic appearance it greatly resembles giant cell tumor or genuine bone cyst, which are dysontogenic mesenchymal blastomas. The difference consists merely in the yellow discoloration of the tissue or the cholesterol content of the cyst produced by a lipid modification of the mesenchymal tumor cell. The appearance of lipophagic granuloma, the inflammatory component of which can be intensified by necrosis, develops only after disintegration of the xanthoma cells and precipitation of crystalline cholesterol, as the result of foreign body irritation of the still functioning mesenchymal cells. Xanthoma of bone thus is a giant cell tumor or a bone

cyst the mesenchymal cells of which have undergone secondary lipid changes, such as occur also in other tumors. For this reason bone xanthoma is best identified by the term "solid or cystic xanthomatous mesenchymal blastoma." There is no primary disturbance in the lipid metabolism, although slight hypercholesteremia may have been demonstrated in a few cases; the tumor formation is independent of such a disturbance. The lipid storage of the mesenchymal tumor cell develops neither from an increased supply nor from absorption from decaying foci. Stasis of lymph likewise cannot be demonstrated. Xanthoma is apparently the result of an actively increased cellular function comparable to the lipid and particularly the cholesterol metabolism. The giant cell tumors and ganglions of the tendon sheaths are mesenchymal blastomas. Their genesis corresponds to the corresponding neoplasms in bone. These tumors likewise frequently show a lipid modification of the mesenchymal cells. Thus the embryonal mesenchymal cell is the vehicle of the lipid modification in all these tumors. Localized xanthoma of bone is a benign tumor as far as its histologic character corresponds to that of giant cell tumor or bone cyst. However, a malignant tumor may be masked by similar roentgenologic and macroscopic appearances. A differentiation from the systematic and generalized lipidoses seems necessary, but the occurrence of polystotic forms must be considered.

Struma Suprarenalis Cystica Hemorrhagica.—According to Schröder, Henschen applied the term struma suprarenalis cystica hemorrhagica in 1906 to blood cysts of the adrenal glands. The literature contains records of only 20 cases of this condition. The cyst originates from an adrenal gland or an adrenal tumor and develops gradually, as a rule in the course of decades and as the result of successive hemorrhages into the cystic cavity. Generally the cyst causes difficulties and is discovered only after it has become so large that it interferes with neighboring organs (kidney, spleen, liver, large intestine). Frequently an internal epithelial lining is absent. Adrenal tissue can be demonstrated in the cystic wall or adhering to it; this corroborates the diagnosis. The author reports the successful extirpation of an adrenal blood cyst of 3.75 liters capacity from a woman aged 61. The flank incision of Küttner with combined retroperitoneal and intraperitoneal maneuvers proved advantageous in the removal of the cyst. Marsupialization of the cyst should be resorted to only in an emergency.

Influence of Surgical Trauma on Venous Blood Pressure.—Ollinger investigated the effect of the anesthetic and of surgical trauma on the venous pressure during the postoperative period. The pressure was determined by the Moritz and von Tabora method. In all, two hundred and seventy-four determinations were made on 78 patients, the pressure being determined once before the operation and from two to six times afterward. In two thirds of the patients the venous pressure fell immediately after the operation, but in the other third it rose. The fall was greatest in patients undergoing gastric resection and the rise in those undergoing strumectomy. The extent and persistence of fluctuations in venous pressure generally show some relationship to the extent and nature of the intervention and to the type of anesthesia. The postoperative venous pressure reaction is greater when general anesthesia is used. Trauma caused by general anesthesia is at first considerable but is less persistent than that caused by surgical intervention. Slight upward or downward fluctuations are of no particular prognostic significance. Considerable fluctuations indicate substantial circulatory impairment, particularly if the arterial pressure decreases at the same time. If several days after the operation the venous pressure shows no tendency to return to the initial figure, the circulation is threatened even in the absence of considerable fluctuations in the arterial pressure. The behavior of the venous pressure early indicates possible circulatory and respiratory complications and thus gives hints as to the treatment to be employed. Impairment of the respiratory function may likewise play a part in the development of postoperative fluctuations in the venous pressure. Fluctuations in venous pressure suggest that the postoperative condition is nearly always a collapse for which the term "shock" is not suitable.

Book Notices

The Furtherance of Medical Research. By Alan Gregg, M.D., Director for the Medical Sciences at the Rockefeller Foundation, New York. Cloth. Price, \$2. Pp. 129. New Haven: Yale University Press; London: Oxford University Press, 1941.

This is the eighteenth in the series of the Terry Lectures. It records the development and importance of modern medical research. Gregg emphasizes the importance of selecting the proper persons for research. The investigator should be in a university environment where he is at least tolerated if not appreciated and where he has easy and informal access to the minds of colleagues, where he may have the opportunity to develop disciples and to sharpen his mind. The medical scientist needs association and assistance from a wide range of sciences. "Medical research bears obviously close relation to research of many kinds. As the physiology of today may become the clinical knowledge of tomorrow, so the discoveries of physics and chemistry of today may become an intimate element in the physiology of tomorrow." This should convey to the student who plans to enter medicine the importance of the preclinical sciences, the significance of which seems to elude the grasp of many who are attempting to teach them.

The requirements of state boards of licensure are not synonymous with those of an adequate training for medical research. The author contrasts the practitioner of medicine and the investigator in the words of Sir Thomas Lewis: "Self confidence is by general consent one of the essentials to the practice of medicine, for it breeds confidence, faith and hope. Diffidence, by equally general consent, is an essential quality in investigation, for it breeds inquiry. . . . A natural companion of confidence is an easy and uncritical acceptance of statements of fact and of hypothesis; it is often coupled with a very wide and diverse acquaintanceship with other men's work and thoughts. The companion of diffidence is skepticism; it tends to be coupled with knowledge less extensive but derived more from personal experience and analysis, knowledge more precise, and often more fundamental. . . . The support of research men of no ability is an extremely wasteful procedure. It is somewhat worse than burning of money because you can easily dispose of the ashes left by a check, whereas the residue of worthless research is publications which choke the libraries, the bibliographies and the minds of students everywhere."

Gregg has described the research worker thoroughly. Usually possessing little means, self sacrificing and shy, these people devote themselves to their ideas, working long into nights and holidays, with little thought of pecuniary return. They are not to be diverted from their course, and they are to be thought of kindly and treated with consideration despite the fact that they do not conform to the usual social pattern. They are occupied with the world's work and they are stimulated by nothing so much as by devotion to an idea and to a job. The modest salary of the researcher is deprecated, as it encourages the talented man to deviate toward the more lucrative alternative, the practice of medicine. It also forces the best who remain in research to such economic struggles as to produce "a virtually sterile academic society, a professoriate overconcerned with economic security and therefore secretly rebellious or timidly resigned, or the academic career open only to those who have inherited money or married it. Men with energy and common sense but no fortune of their own will refrain from entering or advising entrance into so timid and defenseless a company." The part time man, bound to one city by a local practice which supplements his income, encourages the use of availability rather than ability as the criterion for clinical appointment. Gregg believes that this practice is the most serious present danger to the future of clinical medicine in this country. The thought that the clinician may repress the development of research by undoing the groundwork laid by the preclinical teachers is a provocative one.

From his wide experience Gregg has arrived at a fascinating method for computing academic health. If one divides the professors' salary by the figure that it costs a student per year to live and to attend medical school, a quotient is obtained which if below 3.6 is associated with languishing academic recruitment

and decay of the university. When it is above 6.5 the life of the professors' post is comfortable and well competed for.

The main resources for the support of medical research besides the self-sacrificing researcher and his family are personal friends of research men, public subscription (for example, the President's birthday ball), industry, patenting the results of research, the government, the universities and the foundations. The remarks on support for medical research from government are timely, for it must be obvious to any one with half an eye that the future of medical research stands or falls by the nature of this support. The Medical Research Council in Great Britain is presented as a model because of the quality of its work and its unincumbrance by political or parsimonious factors. This council of eleven members is composed of eight men chosen for their scientific and medical qualifications; one other member represents the House of Lords and another the House of Commons. At present the remaining member, the treasurer, is a distinguished banker. Direct political influence is not likely to affect the decisions of the body. This council consists mainly of a group of experts in medical research with full authority to use and control the public money placed at its disposal, independently of all other bodies. This body, as well as our own National Research Council, has pioneered in a field beset by many thorny problems.

The book points out that about one hundred foundations have been organized within the last ten years, and therefore money possibly has been diverted from universities into these tax free holdings. One feels that this development has catalyzed some modern political thought into punitive plans against these financial giants. Gregg has some advice to spare for these relative newcomers in the field. It has been found that capital grants for endowment or long term grants are healthier than short term grants. Foundation support for a germinal idea is advisable (for example, the Commonwealth Fund in the development of child guidance). The fellowship system has yielded unexpected returns, particularly when the fellows were able to range the world.

This short book is addressed to the entire medical profession, to the medical student, to the student who contemplates entering medicine and to many in the allied and basic sciences. It should be read by any who evince or profess an interest in medical research. It will most certainly result in a reevaluation of the position of the thinking man, for its pages shout the admonition "justify yourself."

Enfermedades de las arterias periféricas. Por el Dr. Alfredo V. di Cío, profesor adjunto de patología médica en la Facultad de ciencias médicas de Buenos Aires. Paper. Pp. 461, with 129 illustrations. Buenos Aires: Librería y Editorial "El Ateneo," 1941.

This work emanates from the First Division of Clinical Medicine of the University of Buenos Aires under the able direction of Prof. Mariano R. Castex, well known in this country, who wrote the prologue. Diseases of the peripheral arteries constitute an interesting chapter in human pathology, not only because much of value remains to be explored, but because new syndromes have appeared which have been proposed as independent entities but which have the one common characteristic of being based on diseases of the arteries or of their smallest ramifications. The author studied some 400 cases exhibiting some disturbances attributable to alterations of the peripheral arteries, the great majority presenting signs of claudication and gangrene in the lower extremities. The work includes a study of these 400 cases in detail, as well as descriptions of the technic and the results obtained with the author's new procedure of employing the injection of a carbon dioxide-oxygen mixture. He believes this constitutes a distinct advance in treatment. The subject is presented in orderly fashion, including generalities and technic of methods of exploration in Part I. Part II is devoted to arterial disturbances of functional origin, and part III to arterial diseases of organic origin. The fourth and final part deals with the treatment of peripheral vascular disease. The author recommends absolute abstinence from tobacco in any form, declaring that he has never seen improvement in any patients under his care unless this suppression of tobacco was demanded. He has observed, moreover, that simple suppression of tobacco was accompanied by the arrest of the disease, causing the initial symptoms to disappear without recourse to any other

therapy. His statistics include a series of cases in which the symptoms improved following the treatment instituted plus the suppression of tobacco but reappeared when the smoking habit was renewed. Abstinence from alcohol also is advised. The author goes into great detail regarding general hygienic, dietetic and medical management, and surgical treatment when it is required. His own procedure includes the use of the carbon dioxide-oxygen mixture. The latter is used in place of subcutaneous injections of carbonic acid. The technic of the injection is related in great detail. Summaries of 72 cases and a bibliography terminate the work.

Synopsis of the Preparation and After-Care of Surgical Patients. By Hugh C. Igenfritz, A.B., M.D., Instructor in Surgery, Louisiana State University School of Medicine, New Orleans, and Rawley M. Penick Jr., Ph.B., M.D., F.A.C.S., Professor of Clinical Surgery, Louisiana State University School of Medicine. With foreword by Urban Maes, M.D., D.Sc., F.A.C.S., Professor of Surgery and Director of the Department, Louisiana State University School of Medicine. Fabrikoid. Price, \$5. Pp. 532, with 55 illustrations. St. Louis: C. V. Mosby Company, 1941.

While the evaluation of surgical risk depends, in the main, on experience and judgment, certain factors under the control of the surgeon can modify and control much of the risk. These factors have become more tangible in recent years and are approaching scientific reality. The ability of a patient to withstand major surgical attack can be definitely increased by proper measures undertaken prior to and succeeding operation. The most important advances in this field are those relating to a better understanding of fluid and electrolyte balances in the body and a better comprehension of shock. This book, intended primarily for surgical residents and practitioners, relates some of the basic problems of surgical care and practical methods of solving them. Besides chapters on fluid balance, transfusion, shock and general measures, specific practical details for handling situations arising during the surgical convalescence are dealt with. Generalities are usually dispensed with in favor of definite and practical detail. While agreement with various techniques outlined will always be lacking, the methods suggested are generally acceptable and represent one good way of treating. References are plentiful and recent; illustrations are clear and profuse, indexing is thorough; all combine to make this book a welcome addition to the young surgeon's library.

Diseases of the Nose, Throat and Ear: A Handbook for Students and Practitioners. By I. Simson Hall, M.B., Ch.B., F.R.C.P.E., Surgeon to the Royal Infirmary, Edinburgh (Department for Diseases of Nose, Throat and Ear). Second edition. Cloth. Price, \$4.50. Pp. 446, with 74 illustrations. Baltimore: William Wood & Company, 1941.

In this small volume, the second edition of a like handbook first published in 1937, certain chapters have been revised and rewritten to conform with modern advances in the science of otolaryngology. This effort is seen principally in references to the sulfonamide drugs and rhinologic therapeutics from the modern physiologic point of view. Considered as a "handbook for students and practitioners," as implied on the title page, it is a remarkably complete though brief summary of the specialty and as such should meet the purpose for which it was designed. Its extreme conciseness produces serious limitations to its use as an adequate guide to actual diagnosis and treatment, but its comprehensive brevity should make it an ideal refresher for undergraduates and practitioners.

Maude Abbott: A Memoir. By H. E. MacDermot, M.D., F.R.C.P. Cloth. Price, \$2.50. Pp. 264, with 11 illustrations. New York & Toronto: Macmillan Company, 1941.

The author of this memoir, who is the assistant editor of the *Canadian Medical Association Journal*, is to be commended on the simple manner in which he has presented the highlights of Dr. Maude Abbott's career. Dr. Abbott, who was one of the first woman doctors of Canada, gained a reputation which was justly earned. Naturally the book will hold extra pleasure for Canadian readers, but it will also hold much interest for any who pass along its pages. Not only does it depict the possibilities that lie in store for those who have the courage, loyalty, tolerance and vitality possessed by Dr. Abbott but it offers intimate glimpses into the habits of some of her colleagues. Some of these colleagues are internationally known. That the book offers amusing moments is to say the least. For example, Dr. Abbott was closely associated with the Osler Memorial

Volume, which appeared in 1926. During this association she was delayed many months in sending a manuscript for Dr. George Blumer's "Bedside Diagnosis." Considerable and spontaneously witty correspondence resulted between the two. Parts of these letters are reproduced in the book. The gem is Dr. Abbott's reference to Dr. Blumer's work as "Blumer's Bedtime Diagnosis," to which Blumer replied "The work doubtless has soporific qualities, but the correct title is "Bedside Diagnosis."

The Premature Infant: Its Medical and Nursing Care. By Julius H. Hess, M.D., Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine, Chicago, and Evelyn C. Lundeen, R.N., Supervisor, Premature Infant Station, Sarah Morris Hospital, Chicago. Cloth. Price, \$3.50. Pp. 309, with 74 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

The Hortense Schoen Joseph Premature Station of Michael Reese Hospital has a record for saving the lives of premature infants somewhat better than that of most institutions concerned with this field. The record has been accomplished by the introduction of complete control of the environment, the maintenance of aseptic nursing care and the introduction of special techniques for bathing, dressing, feeding and otherwise providing for the infant. In this book the physician who has had charge of this work and the nurse who has been responsible for the meticulous detail have cooperated. Indeed, the work itself is so impressive that it has now been related to the entire program for the care of the premature infant in Chicago. It represents a challenge to all others concerned with similar work.

The Postnatal Development of the Human Cerebral Cortex. Volume II: The Cortex of the One-Month Infant. By J. LeRoy Conel, Professor of Anatomy, Boston University School of Medicine, Boston. Cloth. Price, \$8. Pp. 147, with 220 illustrations on 105 plates. Cambridge: Harvard University Press; London: Oxford University Press, 1941.

This monograph, the second of its kind by the author, describes in detail the cortex of the 1 month infant. It is beautifully illustrated and the printing is excellent. The author finds the "brain of the 1 month infant to be much less gelatinous in appearance and firmer to the touch than the brain of the newborn. He states that the difference in consistency of tissues is clearly noticeable before and after fixation in formaldehyde. The contents of the book include sections on the lobus frontalis, lobus parietalis, lobus occipitalis, lobus temporalis, lobus insulae and rhinencephalon. This is a rare contribution and together with the first volume should be purchased by all neurologists, neurologic surgeons, pediatricians and neuroanatomists. It is a masterpiece.

Source Book of Medical History. Compiled with Notes by Logan Clendening, M.D., Professor of the History of Medicine, University of Kansas, Kansas City. Cloth. Price, \$10. Pp. 685. New York & London: Paul B. Hoeber, Inc., 1942.

This volume includes historical notes by Dr. Clendening and actual reproductions of the original writings, which have achieved a place in the history of medicine in the form, however, of English translations. There is an extensive index, which will aid the physician in reference to the fields in which he is especially concerned. Previously works of a similar character by Camac and Major and the various volumes of selected readings have served as models for this volume, but the author has obviously been guided largely by his own interests. A special feature is the inclusion in this volume of quotations from literature not definitely medical as, for example, some of the writings of Molière, Macaulay and Le Sage.

Clara Barton: Daughter of Destiny. By Blanche Colton Williams. Cloth. Price, \$3.50. Pp. 468, with 31 illustrations. Philadelphia, New York & London: J. B. Lippincott Company, 1941.

This book will delight the lover of biographies. It is well written and almost brings to life the person of Clara Barton. The history of the beginnings of the American Red Cross and the long fight before the United States acceded to the treaty of Geneva is of particular interest at this time. Today, the Red Cross is taken for granted. No one questions its ability to relieve the suffering caused by disaster. Its place on the battlefield is also an accepted fact. Clara Barton is portrayed as a wilful, stubborn person—in fact, just the type that was necessary to carry through such a difficult assignment. The book should serve as an inspiration to the young student who would like to save humanity, as well as make excellent reading.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BURNS BY PHOSPHORUS

To the Editor.—Can you give me any information concerning burns by white phosphorus (P_4) and phosphorus trichloride (PCl_3)?

J. J. Reason, M.D., Carteret, N. J.

ANSWER.—White phosphorus ignites spontaneously in the air and burns gradually from the surface. It may give rise to serious burns, since even when embedded in the flesh it will continue to burn as long as air can reach it. According to Vedder (The Medical Aspects of Chemical Warfare, Baltimore, Williams & Wilkins Company, 1925, p. 194) first aid treatment is directed toward stopping the phosphorus from burning and toward removal of any of the substance remaining in the wound. The part is immersed in water or is irrigated, and any remaining phosphorus is washed out or is wiped off with a wet gauze sponge held with forceps. The later treatment is the same as that for any other burn. Phosphorus trichloride is a liquid at ordinary temperatures, is noninflammable and gives off a toxic vapor. In the presence of moisture it is extremely hygroscopic and hydrolyzes rapidly, with the formation of hydrochloric acid. Its effect on the skin is not that of a true burn and is not specific for phosphorus but is that of the caustic or the corrosive action of a strong acid. The substance should be removed or neutralized by washing of the affected part with dilute alkali and the wound treated by measures appropriate to any other injury of like severity.

EXFOLIATION OF HANDS AND FEET

To the Editor.—A man aged 43, a commercial airline pilot, complains of peeling of the skin on the ventral surfaces of the hands and feet. This has occurred in attacks yearly since 1935. The disturbance has always been preceded by an acute respiratory infection, usually of a mild nature. The attack of peeling has never occurred at any other time than in the fall of the year, even though the patient may have colds during the other seasons. The hands are first affected, peeling of the epidermis starting at the finger tips and extending cephalad over the palms. After a week's interval the feet are affected in a similar manner. Several episodes of peeling may occur in these locations, after which the skin returns to normal and remains so until another cold develops in the ensuing fall. The patient takes no medication of any kind. There is no history of allergic phenomena affecting him or other members of his family. His general health is excellent. I can elicit no history of exposure of his skin to irritants or other substances during the fall months with the possible exception of the fact that he is accustomed to remove nightshade from his yard at this time of year. He does not wear gloves at any time. Physical examination discloses extensive peeling of the epidermis, most pronounced at the finger tips extending up under the nail beds and cephalad to the wrists. There is no vesiculation, weeping or other eczematous reaction. During the present attack the skin of his feet has not yet become involved. He has a mild trichophytosis between the toes. No other physical abnormalities are discoverable. The blood Wassermann reaction and blood count are uninformative with the possible exception of a 4 per cent eosinophilia. The platelets appear larger than normal but number 540,000. Cutaneous tests with oidiomycin and trichophyton are strongly positive for the former. Microscopic examination of scalings from the cutaneous lesions does not disclose the presence of fungi. Patch tests with the berry, leaf and flower of the nightshade are negative. Any suggestions as to further study or the possible cause of the difficulty would be appreciated.

M.D., California

ANSWER.—The commonest cause of exfoliation of the palms and soles is the disease called keratolysis exfoliativa. This was first described in the American literature and given its name by G. W. Wende in 1919 (Keratolysis Exfoliativa, *J. Cutan. Dis.* 37:174 [March] 1919); but soon after Wende's article appeared J. E. Lane (Some Observations on Keratolysis Exfoliativa, *ibid.* 37:223 [April] 1919) pointed out that Carajon had described it in 1903 under the name desquamation estivale en aires des mains. Lane compares the two descriptions in an interesting manner and adds his own observations. MacKee and Lewis (Keratolysis Exfoliativa and the Mosaic Fungus, *Arch. Dermat. & Syph.* 23:445 [March] 1931) discussed its relation to fungous infections. They found foci of such infection in all their cases of keratolysis exfoliativa and they cited similar results of the study of such cases by others. A few have found fungi in the scales of the dry vesicles on the palms; but MacKee and Lewis did not. They found the mosaic fungus in these scales in potassium hydroxide prepa-

rations. They believed that keratolysis exfoliativa is a part of the picture of fungous infection in human beings. Others, however, still dispute the relation of the mosaic fungus or appearance to such infection. The toe infection in the case under discussion suggests such a relationship, and this is strengthened by the positive reaction to oidiomycin; but such infections are so common that they may be simply coincidental.

The strict periodicity of the phenomenon and the preceding mild disturbance of the upper respiratory tract suggests a much rarer condition, deciduous skin, shedding of the skin. P. E. Bechet (Deciduous Skin, *Arch. Dermat. & Syph.* 37:267 [Feb.] 1938) reported a case, the second mentioned in the American literature since 1911. The first was the one reported by Howard Fox (Keratolysis Exfoliativa Congenita, *ibid.* 3:202 [Feb.] 1921) of a woman whose skin sealed off in large flakes during the whole year. Bechet's patient shed his skin during the whole summer, not at all during the rest of the year. Bechet, on the basis of reddening of the skin previous to exfoliation, considers cases previously reported as shedding of the skin, such as the one reported by Frank and Sanford, reviewed in the textbooks (Ormsby, O. S.: Diseases of the Skin, ed. 5, Philadelphia, Lea & Febiger, 1937, p. 122) as scarlatiniform erythema rather than genuine shedding of the skin. He discusses the differential diagnosis between these. Weidman, in the discussion of Bechet's paper, suggests that genuine shedding may be a "phylogenetic phenomenon" like the shedding of the snake's skin. If the case described in the query is a genuine one of shedding of the skin it is extraordinarily limited.

FAMILIAL AND HEREDITARY CATARACT

To the Editor.—I am confronted with a rather puzzling medicosocial problem. In 1933 I examined the eyes of a woman with congenital cataract. She had three children, a girl, 13, who had cataract, a boy, 10, who had cataract to some extent, and another boy, 15, who did not have cataract. I recently received word from the boy who does not have cataract intimating that he was contemplating marriage. He fears that if he should become a father this trait might be transmitted to his children. He asks my advice as to whether he should undergo the operation of vascelomy to avoid this possible catastrophe. The family history, which I secured from a good friend who is the brother of the woman with cataracts, indicates that she and another brother are the only ones in a family of ten who were so afflicted. It is not even certain that the brother has cataract; it is known only that he goes about with his eyes half closed. He has and has had sufficient vision to enable him to drive a truck. It seems to me that this young man runs little risk of having children with congenital cataract and yet I think there is some risk. I should appreciate an opinion on this problem.

M.D., Missouri.

ANSWER.—From the family history given, which is unfortunately incomplete, it would seem as though cataracts were familial and hereditary in this family. There is no question that cataract can be transmitted in families, as shown in the accompanying table. Green (26th Annual Meeting of the American Ophthalmological Society, 1890, p. 724) reported one family in which twenty-one members were affected. Nettleship (*Royal London Ophth. Hosp. Rep.* 16, part 3) reported on the occurrence of senile and juvenile cataract in one hundred and sixty-seven families; from three to six generations were affected; in one family thirty members in four generations showed the defect.

Milikin (*Ann. J. Ophth.*, March 1903) reported 14 cases of hereditary cataract in three families.

Heredity of Cataract*

Type of Heredity	Number of Families	Total Children	Children Affected	
			Number	Per Cent of Total
Direct heredity, both parents affected	3	15	9	60†
Direct heredity, one parent affected	301	1,012	589	58
Indirect heredity	29	107	45	42†
Collateral heredity	65	312	193	62

* Extract from table on heredity of eye diseases collected by Dr. J. J. MacKee. Blindness and Its Prevention, *Ann. Ophth.*

† Figures too small for sound percentages.

Nettleship and Ogilvie (*Tr. Ophth. Soc. U. K.* 26:191, 1906) studied the Coppock family and reported 20 cases in four generations. Mann (Developmental Abnormalities of the Eye, Cambridge, University Press, 1937, p. 343) stated that in the Coppock family "inheritance was always direct; i. e., a parent of the affected individual always showed the defect and unaffected cases never transmitted to their offspring (the 'once free always free' rule)."

According to Waardenburg (Modern Trends in Ophthalmology, 1940, p. 101) it is now established that both sex chromosomal (gonosomal) and autosomal genes are involved in ocular disorders, but it is not known to which of the twenty-three autosomes of the mature human gametes these characters belong. He also reports that a case of congenital total cataract perhaps belonged to the sex-linked inheritance which is due to recessive genes localized in the X chromosome.

Judging from the data collected by Mann there is evidently greater than normal risk of this marriage producing children with hereditary cataract. It would certainly be the part of wisdom for this young man to refrain from having children.

WASSERMANN TEST IN HUSBAND AND WIFE

To the Editor:—A woman pregnant for the first time has a negative Wassermann reaction and no clinical evidence of syphilis. Her husband had a Wassermann test done, and the result was 4 plus. This was verified in two other laboratories. A second Wassermann test for the woman gave negative results. She was given 3 Gm. of neoparsphenamine, and a week later the Wassermann reaction was negative. Neoparsphenamine injections are being continued irrespective of the negative Wassermann reaction. Williams, in his *Obstetrics*, cites a case in which superimposed pregnancies (from different fathers) resulted in one syphilitic child and one free of syphilis, and it was determined that one father had syphilis and the other did not. The husband of the prospective mother has no clinical evidence of syphilis and gives no history of an initial lesion. Is the antisyphilitic treatment of the mother correct? Should it be continued after the child is born even though the Wassermann reaction is negative? Should the child receive any antisyphilitic treatment? Should future pregnancies be inadmissible before the father is Wassermann negative?

T. J. English, M.D., Philadelphia.

ANSWER:—The information furnished is insufficient. Nothing was stated about the history of the husband's case, nor was it stated whether the cerebrospinal fluid has been tested serologically. Every attempt should be made to find out how long the husband has had syphilis. It is possible that he has old latent syphilis that is no longer transmissible.

Under the circumstances, it was not justifiable to start the wife on the therapy until one had determined the status of the husband. To have done so creates an awkward situation. The usual feeling is that once the patient is started on treatment for syphilis this must be continued and be given in the same manner as if the patient had acquired syphilis.

In this case, however, as far as is known, there is not the least evidence that the patient has had syphilis, and if it were not that she is pregnant the recommendation would be to stop all treatment at once and perform a serologic test once a month. Since she is pregnant, however, it would be advisable to have a consultation with an authority on the subject and to attempt to find out as nearly as possible how long the patient's husband has had syphilis, for if he really has latent syphilis all therapy should be discontinued.

Naturally the child should not receive treatment for syphilis if it does not have the disease.

The answer to the last question will depend much on how long the father has had syphilis and on the result of careful physical examination and laboratory studies.

GASTRIC ULCER AND ANGINA PECTORIS

To the Editor:—Is there any evidence associating angina pectoris with gastric ulcer? Is there any evidence of ulcer being the cause of angina? If the two conditions were present in the same patient would the gastric ulcer aggravate the angina?

R. E. Fowler, M.D., Harrison, Ark.

ANSWER:—There is no evidence that gastric ulcer and angina pectoris occur together with any unusual frequency. Gastric ulcer is a relatively common disease; the simultaneous presence of angina pectoris and gastric ulcer is so rare as to preclude any special association of these two disorders.

Both the heart and the stomach are supplied by the vagal and the sympathetic systems, and disturbances in one organ may be reflected through nerve pathways to the other. It may be clinically difficult to recognize or demonstrate the presence of gastric disease simulating angina pectoris or to establish the cardiac basis for distress referable to the epigastrium or the upper part of the abdomen. Occasionally, however, disease may be found to exist in both the heart and the stomach, and attempts have been made in such cases to establish an etiologic relationship between the two diseases. Gilbert, Fenn and LeRoy have demonstrated that distention of the dog's stomach produces coronary vasoconstriction. Hinrichsen and Ivy, on the other hand, failed to demonstrate this in earlier work. In similar experiments on man, employing artificial methods of gastric distention, Morrison and Swalm expressed the belief that they could demonstrate the reflex nature of attacks of angina pectoris in patients with gastrointestinal disturbances. Despite these

investigations there is no satisfactory proof that a gastric ulcer may be the sole cause of true angina pectoris or that ulcer may play even an indirect part in the anginal pain. Cases have been reported in which treatment of the gastric lesion has resulted apparently in alleviation of the anginal attacks. Eradication of focal infection has been said to accomplish the same result.

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HISTAMINE DESENSITIZATION

To the Editor:—Will you kindly let me know the details of the technique for histamine desensitization in cases of general allergy?

M.D., New York.

ANSWER:—Histamine injections are seldom useful or indicated in cases of general allergy. It may be helpful in occasional cases of urticaria and of some types of physical allergy, particularly intolerance to cold. It is not at all certain that histamine injections result in tolerance to larger doses of histamine. The probable action of histamine treatment is an exhaustion of the reactive mechanism of tissue cells. One of the most common techniques of histamine treatment consists in giving small doses of the chemical at frequent intervals, a solution of a histamine salt, such as the phosphate, being used. A dilution of 1:5,000 may be the initial strength used. The dose of 0.1 cc. of this solution can be increased by additional increments of 0.1 cc. each time. Injections are given at first twice daily, later once daily and still later twice weekly. When a dose of about 0.5 to 1 cc. of a 1:2,500 dilution is reached the characteristic histamine reactions occur, consisting usually of flushing of the face, headache and possibly palpitation, and the dose should be slightly decreased. Treatment is to be given, as a rule, for several weeks. Another method of histamine treatment consists in giving 0.5 to 1 mg. of the drug in 500 to 1,000 cc. of an isotonic solution of sodium chloride or of a 5 per cent dextrose solution intravenously by the drip method, about two hours being required to complete the injections. This can be done once daily for several times.

SODIUM BICARBONATE THERAPY AND RENAL STONES

To the Editor:—Is there any relationship between the taking of sodium bicarbonate and other alkalis for gastric disorders and the formation of renal stones?

M.D., New York.

ANSWER:—In a discussion of the formation of renal stones from the ingestion of alkalis used in the treatment of stomach disorders one must exclude secondary calculi or those due to some preexisting pathologic lesion of the urinary tract.

Primary renal calculi are those formed in an apparently healthy urinary tract. Randall has pointed out that there is a precalculous lesion found in a renal papilla which, when it is bathed in calcine urine, forms the nidus for all primary calculi. He referred to this as a calcified plaque which has formed as a reparative process.

A person who uses alkalis for some gastric disorder or for another reason will have an abnormally greater concentration of these substances in the urine than one who does not. With the presence of a precalculous lesion in a kidney there is a greater chance for the formation of calculi in alkali users.

It has been presumed by some investigators that the constant irritation of the renal calices by the phosphatic deposit leads to the exudation of a little fibrin, which cements the calculus. Other writers have expressed the belief that there is little relationship, if any, between the ingestion of alkalis and the formation of renal calculi.

One with any important amount of experience in the handling of patients with urinary calculi is impressed by the high incidence of urinary stones in patients under medical management for gastric ulcer. Regardless of statistics or articles written to disprove this statement, almost all observers in the field consider the foregoing statement to be an absolute fact.

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THE USE OF SULFADIAZINE AND SULFATHIAZOLE IN DIA- BETES MELLITUS

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AND
HOWARD F. ROOT, M.D.
BOSTON

Treatment of 100 consecutive diabetic patients by means of sulfathiazole and sulfadiazine is here reported with respect to the toxicity of these drugs in diabetes mellitus, their effect on the control of diabetes and the efficiency of the treatment in various types of infection.

Sulfanilamide became generally available in 1937. It was found to be effective against beta hemolytic streptococci, meningococci, urinary tract infections, trachoma, chancroid and lymphogranuloma venereum. To a less extent it was effective in gonorrheal infections, undulant fever and actinomycosis. In 1939 sulfapyridine was widely and effectively used in pneumococcal infections and gonorrheal infections. In 1940 sulfathiazole proved more effective and less toxic in staphylococcal infections, and in 1941 sulfadiazine was introduced as even more efficient against all organisms than the drugs mentioned and, in addition, it was found active in Friedländer infections.

Recently Beardwood and Rouse¹ attributed three cases of diabetic acidosis to the administration of sulfanilamide. Although the presence of acidosis does not necessarily imply the ketosis found in the diabetic with lowered carbon dioxide content of the plasma, the question arises, nevertheless, whether the sulfonamides can be used safely in the treatment of diabetic patients with infections without further serious disturbance of diabetic metabolism. Second, it may be asked whether dosages effective and safe in the nondiabetic may be used with equal effect and with equal safety in the presence of diabetes.

There are many references which bear on the changes encountered in the acid-base balance when sulfanilamide is given. A review of some pertinent reports in this respect may serve to emphasize the necessity for considering the status of the acid-base balance of patients who receive chemotherapy. If such consideration is important in the nondiabetic, then it is even more important for the diabetic, in whom acidosis may be easily precipitated.

Southworth² showed a fall in carbon dioxide content of the plasma varying from 1.9 to 27.3 volumes per cent of 15 patients given a single test dose of sulfanilamide varying from 2.7 to 6.0 Gm. The fall occurred during treatment and up to forty-eight hours after the sulfanilamide was given. Basman and Perley³ showed a prompt change in the reaction of the urine from acid to strongly alkaline while sulfanilamide was being given. Marshall, Cutting and Emerson⁴ produced severe acidosis in dogs by giving doses of 1 to 2 Gm. of sulfanilamide per kilogram. Hartmann, Perley and Barnett⁵ presented evidence to show that the lowered blood carbon dioxide and increased alkalinity of the urine were explained on the basis of primary hyperventilation which produced alkalosis. Beckman, Rossmesl, Pettengill and Bauer,⁶ however, were able to demonstrate that the entrance of bicarbonate into the urine preceded hyperpnea and that, therefore, hyperpnea must be considered a secondary event dependent on the acidosis.

ANIMAL EXPERIMENTS

In studies of the effects of the sulfonamides on animals, certain facts have been reported which again may be useful in anticipating changes to which the patient with diabetes is vulnerable. Feinstone and his associates⁷ found that sulfadiazine is less toxic for mice than sulfapyridine or sulfathiazole. When comparison was made between the effects of the prolonged administration of the three drugs in monkeys, sulfadiazine seemed to produce the least evidence of tissue damage. Sulfadiazine was found to be less conjugated in the blood stream, and the acetylated drug was excreted rapidly in the urine. Since the acetyl derivative is soluble in urine, it was less likely to produce urinary complications. In the same study Feinstone and his associates demonstrated that sulfadiazine in doses of 2 Gm. per kilogram daily produced pathologic changes in the tissues of animals, confined for the most part to the kidneys. The organs of animals receiving only 0.5 Gm. per kilogram or less showed normal organs at necropsy. The blood concentration found in acute

Associated with the Administration of
(Prontylin), Proc. Soc. Exper. Biol. &

3. Basman, J., and Perley, A. M. Report of Patients Treated with Sulfanilamide at the St. Louis Children's Hospital, *J. Pediatr.* **11**: 212 (Aug.) 1937.

4. Marshall, E. K., Jr., Cutting, W. D., and Emerson, Kendall, Jr. The Toxicity of Sulfanilamide, *J. A. M. A.* **110**: 252-257 (Jan. 22) 1938.

5. Hartmann, A. F., Perley, Anne M., and Barnett, H. L. A Study of Some of the Physiological Effects of Sulfanilamide. I. Changes in the Acid-Base Balance, *J. Clin. Investigation* **17**: 465-472 (July) 1938.

6. Beckman, W. W., Rossmesl, E. C., Pettengill, R. B., and Bauer, W. Study of Effects of Sulfanilamide on Acid-Base Metabolism, *J. Clin. Investigation* **19**: 635-644 (July) 1940.

7. Feinstone, W. H.; Williams, R. D.; Wolff, R. T.; Huntington, E., and Crossley, M. L. The Toxicity, Absorption and Chemotherapeutic Activity of 2 Sulfanilamidopyridine (Sulfadiazine), *Bull. Johns Hopkins Hosp.* **67**: 427-456, 1940.

From the George F. Baker Clinic, Elliott P. Joslin, medical director, New England Deaconess Hospital.

1. Beardwood, J. T., and Rouse, G. P. Diabetic Acidosis, *J. A. M. A.* **117**: 1701-1704 (Nov. 15) 1941.

toxic deaths in mice averaged between 170 and 200 mg. per hundred cubic centimeters. Death occurred in eight to twenty days. In mice acute toxicity could not be brought about by oral administration, since blood concentrations did not reach a high enough level. The concentration of the drug in the blood, determined largely by the dosage, seemed closely related to the occurrence of pathologic changes, a point of prime importance in clinical usage.

Greisheimer and his associates⁸ studied the effect of sulfanilamide, sodium sulfapyridine and sodium sulfathiazole on the blood sugar and liver glycogen of rats which had been fasted and of rats which received dextrose after a fifteen hour fast. Three hours after drug administration the animals were killed. A dose of 1.8 cc. of 1 per cent sulfanilamide solution per hundred grams of body weight affected the blood sugar in neither group of animals. A decrease in the liver glycogen occurred in the fasting rats and a rise in the liver glycogen occurred in those which received dextrose. Solutions of sodium sulfapyridine varying from 7.5 to 10 per cent administered in doses of 1 cc. per hundred grams of body weight lowered the liver glycogen and raised the blood sugar of the rats. Sodium

lowered glycogen content of the liver, dehydration and acidosis which characterize the patient with poorly controlled diabetes. As to the exact mode and site of operation of these factors, little information is available."

Climenko and his associates¹² showed that continued administration of sulfathiazole to dogs for ten days in doses of 250 mg. per kilogram daily produced impairment of renal function, as evidenced by elevation of the blood urea nitrogen level and diminution in the urea clearance and excretion of phenolsulfonphthalein. The impairment was reversible. They demonstrated no effect on oxygen capacity or the oxygen and carbon dioxide content of the blood. No effect on liver function was indicated by the bromsulphalein test.

Long, Bliss and Ott¹³ in experimental infections in mice concluded that the inferiority, with equivalent blood concentrations, of sulfadiazine to sulfathiazole in pneumococcal infections is offset by the relative ease with which higher blood concentrations are attained and maintained with sulfadiazine. They found that mice tolerated levels of 25 mg. per hundred cubic centimeters for periods of two weeks without apparent ill effects and without damage to the kidneys, liver or spleen.

Numerous reports deal with the precipitation of acetylated drugs in the kidneys, ureters and bladder. To date little demonstrable damage has taken place in the liver after administration of sulfathiazole or sulfadiazine.

CLINICAL DATA

In the course of the past year we have used sulfadiazine and sulfathiazole in over 100 cases of infection in diabetes. The patients ranged in age from 7 years to 86 years. One patient was 7 years old, 8 were from 15 to 30, 15 from 30 to 50, 18 from 50 to 60 and 58 over 60 years of age. Duration of diabetes varied from one month to thirty-three years. Eight patients had diabetes less than a year, 17 from one to five years, 29 from five to ten years and 46 over ten years' duration. Eighteen of the latter group had diabetes longer than fifteen years. The patients had a variety of cardiovascular and renal diseases. In comparing results obtained in diabetic with nondiabetic patients it is possible that some diabetic patients may come for treatment in a relatively early stage of an infection but that this may be offset by the well known tendency for pyogenic infections to extend rapidly in the diabetic. Actually no clear distinction is possible in this respect between diabetic patients of this series and the nondiabetic.

In table I a total of one hundred and eleven infections in diabetic patients is summarized with respect to improvement following the use of sulfadiazine and sulfathiazole. Among the 100 diabetic patients four deaths occurred. Only 15 patients with pneumonia were included in the series, of whom 1 died. The other patient with "unimproved" pneumonia was a woman aged 27 who had a very stormy clinical course and who finally improved with drainage of a lung abscess.

Our results compare satisfactorily with those of Flippin and his associates,¹⁴ who in April 1941 reported

TABLE 1.—Results of Treatment of One Hundred Diabetic Patients with Sulfadiazine and Sulfathiazole

Diagnosis	Number	Improved
Foot infection . . .	52	49
Cystitis or pyelonephritis.	20	28
Pneumonia	15	13
Carbuncle . . .	4	4
Infected finger . . .	3	1 saved, 2 amputations
Suppurative adenitis . .	3	3
Miscellaneous	14	13
Total diagnoses	111	103
Deaths . . .	4 (3 among 28 amputations of the leg)	

sulfathiazole in the same amounts had little effect on the liver glycogen but raised the blood sugar. It was concluded from these studies that sodium sulfapyridine inhibits glycogen formation and storage. Wertenberger⁹ reported a rise in the blood pH of rats from 7.52 to 7.66 and from 7.53 to 7.60 respectively after intraperitoneal injections of the sodium salts of sulfapyridine and sulfathiazole. Their data support the view that the high alkalinity of these compounds tends to exhaust the buffer capacity of the body and to produce alkalosis. The effect of infection in the presence of lowered liver glycogen was emphasized by Richardson,¹⁰ who found that in normal rabbits and depancreatized cats there existed a correlation between the amount of glycogen present in the liver and their resistance to the intravenous injection of staphylococci. He also found a lowered titer for agglutinins when poorly nourished cats received typhoid vaccine.

Joslin and his associates¹¹ state that "the causes for lowered resistance to infection in diabetes are still not apparent. It is certainly related to the malnutrition.

8 Greisheimer, E. M., Hafkesbrung, R., and Magalhães, H. Blood Sugar and Liver Glycogen After Single Doses of Sulfanilamide, Sodium Sulfapyridine and Sodium Sulfathiazole, *M. Times* 69: 170-173 (April) 1941.

9 Wertenberger, G. E.: pH Changes in the Blood Following Sulfapyridine and Sulfathiazole Administration, *Am J Physiol* 133: 488 (June) 1941.

10 Richardson, R.: Relation of Tissue Glycogen and Blood Chemistry to Bacterial Dissemination, Antibody Formation and Survival After Infection in Diabetes, *J. Clin. Investigation* 19: 239-250 (Jan.) 1940.

11 Joslin, E. P.; Root, H. F.; White, Priscilla, and Marble, A. The Treatment of Diabetes Mellitus, ed. 7, Philadelphia, Lea & Febiger, 1940, p. 457.

12 Climenko, D. R., McChesney, E. W., and Messer, F. C.: Administration of Sulfathiazole in Renal and Hepatic Function in the Dog, *Proc Soc Exper Biol & Med* 46: 124-128 (Jan.) 1941.

13 Long, P. H., Bliss, Eleanor A., and Ott, E.: Studies on Sulfadiazine I. The Chemotherapy of Experimental Hemolytic Streptococcal, Pneumococcal and Staphylococcal Infections in Mice, *Bull John Hopkins Hosp* 69: 297-302 (Oct.) 1941.

14 Flippin, H. F., Rose, S. B., Schwartz, Louis, and Dunn, A. H.: Sulfadiazine and Sulfathiazole in the Treatment of Pneumococcal Pneumonia, *Am J M Sc* 201: 585-592 (April) 1941.

200 cases of pneumococcic pneumonia with twenty-eight deaths. Finland, Strauss and Peterson¹⁵ used sulfadiazine in treating 178 patients with pneumococcic pneumonia, of whom 19 died. Previously one hundred and twelve deaths occurred in 687 patients treated with sulfapyridine or sulfathiazole.¹⁶ More recently Billings and Wood¹⁷ reported the use of sulfadiazine alone in 75 cases of pneumococcic pneumonia with but one fatality. In treating critically ill patients they administered sodium sulfadiazine intravenously in order to obtain early effective blood levels. They felt that sulfadiazine is the drug of choice in treating pneumococcic pneumonia.

Of the 52 foot cases 49 improved, but surgical and diabetic treatment given simultaneously may have been responsible. We had eighteen improved urinary infections. One unimproved patient had hydronephrosis and megaloureter requiring nephrectomy. Yet he continued to have some pyuria from the other kidney, in which stones were present. Improvement later occurred and at present an operation on the other kidney is contemplated. The second was a patient with a prostatic abscess who did later improve with incision and drainage of the abscess. The 4 cases of carbuncle, 3 of finger infections and 3 of suppurative adenitis also represent combined surgical and chemical treatment in which the favorable outcome can only in part be attributed to the drugs. In the miscellaneous group was 1 patient with a pyogenic brain abscess and associated meningitis, who died. Also were included ulcers of the leg, hemolytic *Staphylococcus aureus* septicemia, abdominal wall infection, lung abscess, furunculosis, cheek abscess, upper respiratory infection and post-operative pelvic cellulitis. The case of *Staphylococcus aureus* septicemia is the second with repeatedly positive blood cultures in which recovery occurred in our experience with sulfadiazine treatment.

As regards chronic bacterial infections which require prolonged treatment, Trevett, Nelson and Long¹⁸ consider sulfadiazine the drug of choice.

It seems evident that one cannot expect chemotherapy to cure necrotic lesions such as carbuncles and gangrene in the diabetic. However, it seems to control extension of pyogenic infections and to have special advantages in pneumonia and particularly in genitourinary infections, to which the diabetic are notoriously vulnerable.

The organism in the pneumonias was predominantly the pneumococcus and that in the foot infections predominantly the hemolytic staphylococcus, with a few cases in which nonhemolytic staphylococci were recovered. *Escherichia coli* was recovered in practically all the urinary infections. In the miscellaneous cases the hemolytic *Staphylococcus aureus* was invariably found.

The pneumonia patients were usually given an initial dose of 2 or 3 Gm. of either drug followed by 1 Gm. every four to six hours until the temperature remained normal for twenty-four to forty-eight hours. The total

dosage varied from 53 Gm. taken in nine days to 12 Gm. taken in two days. The drug levels varied from 1.6 to 11.4 mg. per hundred cubic centimeters but averaged 5 mg. per hundred cubic centimeters.

The patients with foot infections were given as a rule an initial dose of 3 Gm. of either drug and maintained with 1 Gm. every four or six hours. Total dosage varied from 12 Gm. given in the forty-eight hours preceding major amputation to 113 Gm. over a period of twenty-two days. The drug levels varied from 1.3 to 18.9 but averaged 6.3 mg. per hundred cubic centimeters.

Patients with urinary infections received smaller doses of the drug but were oftentimes given treatment over a much longer period of time. Frequently a patient with a urinary infection was given 1 Gm. every four to six hours for the first twenty-four hours. The dose was then ordinarily reduced to 0.25 or 0.5 Gm. every four hours. One patient received 51 Gm. given as

TABLE 2—Comparison of Effects of Sulfadiazine and Sulfathiazole on Two Hundred Nondiabetic¹⁴ Compared with One Hundred Diabetic Patients

	Sulfadiazine		Sulfathiazole	
	Per Cent Non-diabetic	Per Cent Diabetic	Per Cent Non-diabetic	Per Cent Diabetic
Nausea	10	12	21	18
Vomiting	5	10	0	11
Hematuria (microscopic)	4	2	9	0
Dermatitis	1	0	2	7
Conjunctivitis	0	0	1	7
Psychoses	7	5	3	2
Fever	1	0	2	5
Leukopenia (5,000)	2	0	2	0
Nonprotein nitrogen increased		2	..	0
Neutropenia (40%)	0	0	1	0
Anemia . . . . .	..	5	..	0
Crystals	29	49	70	71
Incidence of toxic effects		23	..	46
Deaths	11	5	17	4

0.5 Gm. five times a day. Many patients were sent home on small doses of sulfadiazine or sulfathiazole (e. g. 0.5 Gm. three times a day) and were followed in office visits. Blood levels varied from 0.6 to 15.0 mg. but averaged 3.5 mg. per hundred cubic centimeters.

As a rule in the miscellaneous cases it was necessary to give doses approximating those in the foot cases to maintain relatively high blood levels. The highest total dosage was given to a patient with *Staphylococcus aureus* septicemia. She received 113 Gm. of sulfadiazine as 1 Gm. five times a day over a period of twenty-two days. During this time nausea and vomiting were the only toxic symptoms encountered. The blood level in this case varied between 8 and 12.6 mg. per hundred cubic centimeters. The same patient later received 45 Gm. of sulfadiazine given as 1 Gm. four times a day. Again nausea and vomiting were the only symptoms of toxicity. The levels of blood sulfadiazine in the second course of treatment ranged from 5.1 to 14.1 mg. per hundred cubic centimeters.

Toxic symptoms in diabetic patients appear with nearly the same frequency as in the nondiabetic patients of Flippin¹⁴ and of Finland.¹⁵ Finland, Strauss and Peterson published a table of toxic symptoms occurring among 446 patients treated with sulfadiazine in which the toxic reactions approximate those of Flippin and

15 Finland, Maxwell, Strauss, Elnis, and Peterson, O. L. Sulfadiazine Therapeutic Evaluation and Toxic Effects on 446 Patients, *J. A. M. A.* 116: 2641-2647 (June 14) 1941.

16 Finland, Maxwell, and Strauss, Elias. Treatment of Pneumococcal Pneumonia with Sulfapyridine, Sulfathiazole and Serum Analysis of the Results of Specific Therapy at the Boston City Hospital from July 1919 Through June 1940, *Ann. Int. Med.* 14: 1184-1198 (Jan.) 1941.

17 Billings, F. T., Jr., and Wood, W. B., Jr. Studies on Sulfadiazine. III. The Use of Sulfadiazine in the Treatment of Pneumococcal Pneumonia, *Bull. Johns Hopkins Hosp.* 69: 314-326 (Oct.) 1941.

18 Trevett, G. L.; Nelson, R. A., and Long, P. H. Studies on Sulfadiazine: II. The Clinical Use of Sulfadiazine in the Therapy of Bacterial Infections Other Than Pneumonia, *Bull. Johns Hopkins Hosp.* 69: 303-313 (Oct.) 1941.

his associates. They also reported ureteral colic and gross hematuria in a patient with sulfadiazine on the seventeenth day of treatment. At the time the blood level was 19.8 mg. The anuria which developed was relieved by catheterization and pelvic lavage. A case was reported by Quick and Lord¹⁹ of acute hemolytic anemia following the administration of sulfathiazole. A youth aged 19 received 10 grains (0.65 Gm.) of sulfathiazole every four hours, and after 70 grains (4.55 Gm.) jaundice appeared. The red blood count dropped to 840,000 and the icteric index rose to 16.5. There was associated azotemia and hypertension. This case illustrates the comparatively infrequent occurrence of severe toxic effects following moderate dosage. In table 2 the frequency of toxic symptoms in the non-diabetic series of Flippin, Rose, Schwartz and Donn¹⁴ is compared with the occurrence of such symptoms in 100 diabetic patients. Although vomiting, dermatitis and conjunctivitis appear rather more frequently in the diabetic, hematuria was much less frequent. Sulfadiazine is less toxic than sulfathiazole in our group of patients. We have all been impressed with the lack of severe symptoms of toxicity encountered, when constant attention is given to early symptoms and to their prevention by the maintenance of a urinary output of 1,500 cc. daily. There were no cases of gross hematuria, and only 2 patients showed an increase in nonprotein nitrogen due to glomerulonephritis in 1 and severe toxemia from a foot infection in the other. One patient had abdominal pain, associated nausea and vomiting and a level of sulfadiazine of 25.3 mg. per hundred cubic centimeters in the blood but recovered promptly on omission of the drug.

The smallest dose of sulfadiazine causing reaction was 12 Gm. taken over a period of three days, whereas

TABLE 3.—Chemotherapy in Fifty-Two Diabetic Foot Infections

	Dorsalis Pedis Pulsation			
	Palpable		Nonpalpable	
	Num ber	Per Cent	Num ber	Per Cent
Cases . . .	20	39	32	61
Major amputation . . .	3	15	23	72
Successful local amputation or drainage . . .	17	85	7	22
Amputation refused . . .	0	0	1*	3
Amputation planned . . .	0	0	1*	3
Deaths . . .	0	0	3	9

* Patients died

in the case of sulfathiazole the smallest dose was 13 Gm. in four days. A few patients showed nausea and vomiting on 2 Gm. a day. One patient had nausea and anemia on 29 Gm. taken over a period of 15 days. Only in 2 cases was it necessary to omit sulfadiazine. The degree of conjugation is evident by the percentage of cases showing crystals in the urine. In summary, 46 per cent of the diabetic patients receiving sulfathiazole and 23 per cent of those treated with sulfadiazine showed some mild toxic effects.

FOOT INFECTIONS

In the study of these 52 cases of diabetic foot infections in which either sulfadiazine or sulfathiazole was administered, it is evident that the blood supply

to the foot is of primary importance. Therefore in table 3 these 52 cases are divided into two groups, one consisting of 20 cases in which the dorsalis pedis pulsation was felt, the other of 32 cases in which no dorsalis pedis pulsation could be palpated. The outstanding facts were that in the first group with palpable dorsalis pedis pulsations major amputations were necessary in only 15 per cent of the group, whereas successful local amputation or drainage was accom-

TABLE 4.—Effect of Chemotherapy on Insulin Dosage in One Hundred Cases of Diabetes

1 Insulin increased	45
2 Insulin decreased	11
Insulin remained the same	24
Insulin equal to or less than discharge dose	17

plished in 85 per cent. On the other hand, in the group without palpable pulsations in the feet major amputations were required in 72 per cent of the cases and advised in 6 per cent, leaving only 22 per cent in which successful local amputation or drainage was done. Therefore, though it has seemed that the use of these drugs is advantageous in preventing the extension of acute infection, they are not and should not be used except with constant supervision of experienced surgical consultants. Indeed, it is not only obvious that chemotherapy does not in such cases provide a substitute for surgery, but actually there is genuine danger that dependence on chemotherapy may lead to such delay that the successful surgery is lost.

The following is a case in point:

A housewife aged 61, who had had diabetes of twenty-two years' duration, developed a small lesion on the dorsum of the third right toe two weeks prior to admission. Treatment had been administered locally without response, and gangrene developed in the toe. On admission lymphangitis had extended on the dorsum of the foot to the ankle. The patient was immediately placed on sulfadiazine, 6 Gm. daily. Local incision and drainage with disarticulation of the toe were performed. The patient had a moderate fever from the time of admission. On the third day of chemotherapy nausea and vomiting developed and the temperature rose to 101 F. At this time the sulfadiazine level was 138 mg. per hundred cubic centimeters and the nonprotein nitrogen of the blood 27 mg. per hundred cubic centimeters. The diabetes was under good control. Sulfadiazine was discontinued because of nausea and vomiting. On the fourth day the patient appeared generally improved. On the fifth day, however, she suddenly developed rapid pulse, cough, and dyspnea with numerous bilateral pulmonary rales which, after x-ray examination, was thought to be consistent with bronchopneumonia. The nonprotein nitrogen was 70 mg. per hundred cubic centimeters and the sulfadiazine level 4.3 mg. It was felt that a guillotine operation should be performed, but the patient's condition obviated operation. She died a few hours later.

Had the patient been treated without regard to chemotherapy and a guillotine operation done early, perhaps she would not have died. In such cases, choice of procedure may be most difficult and hazardous. On the one hand, chemotherapy may in some instances prevent extension of infection and vascular thrombosis, thereby protecting the circulation to the part. On the other hand, reliance on chemotherapy may lead to delay, permitting embolism or other complications which may prevent surgery entirely. Table 3 illustrates the great difference between local surgery in

19. Quick, E. D., and Lord, F. D. Acute Hemolytic Anemia Following Sulfathiazole Administration. J. A. M. A. 127:1704-1706 (Nov. 15) 1941.

patients with good and poor circulation. The fact that no amount of drug therapy can make up for deficient circulation is evident.

EFFECT OF CHEMOTHERAPY ON DIABETIC CONTROL

The effect of sulfadiazine and sulfathiazole on the control of the diabetes during the course of infection may be estimated in many ways as, for example, by changes in the blood sugar or in the amount of dextrose that is excreted in the urine, but one of the best indications is the effect on the insulin requirement. The insulin dosage of these patients varied from none to 90 units. Twenty-two patients required less than 10 units, 19 from 10 to 20 units, 31 from 20 to 40 units, 24 from 40 to 60 units, 2 from 60 to 80 units and 2 above 80 units. This requirement was based on the discharge dosage of insulin. In table 4 are summarized the changes in the insulin dosage during treatment of 100 diabetic patients in this series. It is seen that in 45 cases the insulin dose was somewhat increased, the increases being small as a rule, but in a few cases were as great as 50 to 60 units and in 1 case 100 units. In 55 cases no evidence of an increased requirement for insulin occurred. Thus, in 14 cases the insulin dose decreased, probably as a result of improvement in the infection. In 24 cases the insulin dose remained

care must be taken to prevent reactions in patients whose insulin requirement drops with improvement in the infection.

PRODUCTION OF ACIDOSIS

There were no cases in which acidosis developed concomitant with or because of chemotherapy, as indicated by daily tests for diacetic acid in the twenty-four hour urine. As a test, an elderly woman was given 4 Gm. of sulfadiazine; the changes in plasma carbon dioxide, blood sugar and blood sulfadiazine levels during the following twelve hours are summarized in table 5. The patient entered the hospital in the afternoon with gangrene of the foot, lymphangitis half way to the knee, fever, arteriosclerosis, uncontrolled diabetes and in a condition even more precarious than these facts indicate. She was given sulfadiazine in the hope that extension of the infection might be prevented and that the guillotine amputation through the lower leg, to be carried out on the following day, might be done with less danger. As the table shows there was no significant fall in the plasma carbon dioxide content even though the blood sulfadiazine level rose to 8.0 mg. at the end of five hours. It is of interest that in such a patient a rapid increase in the blood level could be obtained without any evidence of toxic symptoms or of impairment of renal function. It is true that the patient received a small amount of insulin and that the blood sugar value fell in a desirable manner during the twelve hours following the dose.

TABLE 5—Effect of 4 Gm. of Sulfadiazine on the Carbon Dioxide Content of the Blood Plasma

Time in Hours	CO ₂ Content of Plasma, Vols. %	Blood of Sulfadiazine, Mg	Blood Sugar, Mg
0	16 units of crystalline insulin and supper		
1	58	0	278
2	4 Gm. of sulfadiazine by mouth		
2	54	1.1	267
3	59	1.4	190
4	58	2.4	148
5	58	8.0	82
12	57	7.3	125
A woman aged 71 Duration of diabetes, 1 year Infected gangrene of foot			

SUMMARY

The use of sulfadiazine and sulfathiazole in 100 consecutive diabetic patients ranging in age from 7 years to 86 years with infections of various types was observed with respect to the frequency of toxic symptoms, the effect of these drugs on the diabetes and their efficiency in controlling the infection.

The chief toxic effects were nausea and vomiting, but these symptoms occurred with no greater frequency than has been reported in a series of nondiabetic patients. Grave toxic reactions did not occur.

Symptoms of toxic nature occurred with sulfadiazine less frequently and in less serious degree than were observed with sulfathiazole.

The avoidance of severe toxic symptoms depends on their prevention by constant attention to the relation between dosage and blood level of the drug, the maintenance of a urinary output of at least 1,500 cc. daily and vigilance in recognizing early symptoms with consequent omission of the drug.

The insulin requirement was increased in 45 cases during treatment, possibly as the result more of the infection than of the drug, as in 55 cases of the series an actual decrease in insulin dosage occurred, presumably because of the control of the infection.

No evidence of acidosis following the use of sulfadiazine or sulfathiazole was observed.

In diabetic foot infections the chief danger is from the diminished blood supply. Although chemotherapy may prevent extension of infections, the danger of allowing delay in performing surgery must be stressed.

The cure of 2 cases of septicemia due to hemolytic *Staphylococcus aureus* together with the striking results in genitourinary infections and in pneumonia give sulfadiazine first place as a chemotherapeutic agent in such infectious complications of diabetes.

the same, and in 17 cases the amount of insulin required during the period of drug administration was equal to or less than the amount of insulin required on final discharge from the hospital.

Diabetic control is manifestly difficult in the presence of infection. This fact is so axiomatic that the progress of infection is easily followed by the manner in which the diabetes behaves. A man aged 40 in our series, who had a carbuncle, required 100 units of insulin daily for control. Yet later the blood sugars were normal and the urine was sugar free without insulin. It would seem, however, that chemotherapy aids in the control of diabetes by controlling infection, and this is borne out by the fact that only 45 per cent of the patients required more insulin in the presence of an infection. Determination of the effect on insulin dosage of a patient under treatment is difficult because changes in diet and activity in patients under treatment are necessary. Thus inactivity in bed increases the insulin requirement. At least it is apparent that chemotherapy had no striking or permanently harmful effect on the diabetes.

Insulin reactions were very rare in the series. The tendency of the blood sugar to remain at an elevated level during infection makes reactions unlikely, but

THE KENNY TREATMENT OF ANTERIOR POLIOMYELITIS (INFANTILE PARALYSIS)

REPORT OF THE FIRST CASES TREATED
IN AMERICA

JOHN F. POHL, M.D.
MINNEAPOLIS

In March 1940 Miss Elizabeth Kenny of Brisbane, Australia, proceeded to America to present to the American medical profession her unique and original method of treating the disease infantile paralysis. The method of treatment which has become known as the Kenny system has been evolved by Miss Kenny as a result of her painstaking study of the signs and symptoms presenting themselves in the acute stage of the disease as she has observed them over the considerable period of years since her graduation as a nurse in 1911.



Fig 1.—Acute poliomyelitis: hamstring tendons Spasm of the hamstring muscles prevents extension of the knee

Her work has been officially recognized by her government in that clinics have been established at various centers throughout the Australian state of Queensland, and the treatment has been made available in the public institutions. Convictions based on this recognition prompted Miss Kenny to seek acceptance by the American medical profession in the belief that more widespread use of the method would be of value to the victims of the disease throughout the world. Realizing at the same time that her work, however successful from a practical point of view, lacked scientific explanation, Miss Kenny sought assistance in the research laboratories of America for the scientific elaboration of her theories.

The first case undertaken by Miss Kenny came under treatment in June 1940. In all, 26 cases in the acute

and subacute stage were admitted to the Minneapolis General Hospital in the fall of 1940 and were personally treated or supervised by Miss Kenny. She was assisted by Miss Mary Stewart Kenny, herself a trained and skilled technician in the Kenny system, who had accompanied Miss Kenny from Australia. A special ward was set up in the hospital for the purpose of observing the methods and progress of the patients, and complete cooperation from the medical staff as well as the nursing staff was offered Miss Kenny. Approximately eighteen months have now elapsed since the beginning of the work in America. As the usually accepted period of recovery in poliomyelitis is considered to be from eighteen to twenty-four months following the attack, it is now possible to state the conclusions which can be drawn from the observation of the Kenny treated patients in comparison with similar experience in the same clinic previous to the use of the Kenny technique. A summary of these cases is contained in the accompanying table. The tremendous and far reaching advantages of the method over any previously recognized methods of treating infantile paralysis makes it imperative that the work of Sister Kenny be made generally known to the physicians of America as quickly as possible.

First it must be made clear that the Kenny method has no argument with any other method of treatment of infantile paralysis for the simple reason that the principles were designed for the management of specific findings appearing in the acute stage of the disease which had never been recognized previous to the work of Miss Kenny. Practically all attempts at treatment by other means have been aimed at the prevention of deformities, usually by splinting and immobilization, rather than by treating the condition affecting the muscles, which ultimately causes the deformities. In short, the Kenny method is a treatment of certain phases of the disease of infantile paralysis, while practically all other methods are in reality treatment of the after effects of the disease.

The disease of infantile paralysis in the acute stage presents three cardinal attributes according to the conception of Miss Kenny, other than the paralysis due to nerve damage. These fundamental characteristics are muscle spasm, mental alienation of muscle and incoordination of muscle function. It is obvious therefore that treatment based on these findings could have nothing in common with a treatment designed for a disease exhibiting flaccidity of muscle and one which does not recognize incoordination as occurring.

The Kenny method of treatment is based on the belief that poliomyelitis in the acute stage is a disease which attacks not only the nervous system but the muscle tissue directly as well. This is an inflammatory process within the muscle, of which spasm is the most distinguishing characteristic. Spasm of muscle is the earliest, the most common and the most damaging finding affecting the muscles in acute anterior poliomyelitis. Paralysis may or may not be present, depending on involvement of the motor cells of the spinal cord, but spasm is the damaging element in the involved muscles. This characteristic is usually associated in the acute stage with pain, and the spasm itself may be the cause of pain. One of the most striking features in the demonstration of the treatment is the prompt relief of pain and the remarkable comfort of the patient within a few days after treatment has been begun. This in itself is sufficiently dramatic and gratifying as to gain immediate enthusiasm for the method.

Spasm is the condition in muscle tending to cause shortening of the muscle. The stiff neck and the tight hamstrings are examples universally accepted as findings in the acute stage of infantile paralysis. It had not been previously considered that spasm may be a feature of the disease affecting all the involved muscles. Examples of the effect of muscle spasm are shown in figures 1 and 2. A muscle in spasm is unable to relax and allow itself to lengthen. As a result of the shortening process, temporary contractures appear which eventually become permanent deformities if the condition remains untreated. A muscle which is allowed to become shortened, besides causing deformities, has lost part of its useful function. The stiff painful contractures of the limbs are too well known to every orthopedist who has treated the disease in the convalescent stage to need further argument for a method which promises relief. The examination of old or



Fig 2—Acute poliomyelitis tendon of tibialis anticus Spasm of the muscle causes the foot to assume the varus position

apparently recovered cases of infantile paralysis offers abundant proof of the damaging effect of untreated spasm. In many cases the hamstrings and back muscles are still tight and shortened, years after the acute process. Deformities may appear even in the non-paralytic form of the disease.

The relief of spasm is the first consideration in the treatment of the acute disease of infantile paralysis. The determination of the presence of spasm in a muscle can quickly be made by the physician from the presence of pain in the muscle or by the fact of limitation of joint motion by the affected muscle. Care must be exercised not to aggravate the condition of spasm by frequent examination or rough handling of the patient. Extreme gentleness in nursing attention is required in order not to cause more pain and spasm in the irritable muscles. Immediate treatment is imperative if serious and permanent damage to the muscle is to be avoided. Treatment must begin as soon as the disease has been diagnosed. A delay as long as three weeks may mean irrevocable harm to the delicate muscle substance. The Kenny treatment employs the use of moist heat. Wool flannel packs of proper size are immersed in boiling

water, wrung twice through a tight wringer at the bedside and quickly applied to the involved area. The materials comprising the pack are shown in figure 3. The pack must accurately cover the entire body of the affected muscle, but joints are left free in order not to give the patient any sense of immobilization of the limb.



Fig 3—Acute poliomyelitis. Miss Kenny demonstrates the application of the hot pack. Note the covering layers in position ready for immediate completion of the pack.

The moist pack is covered with oiled silk and then with dry flannel. The pack is changed every two hours but may be renewed as often as every fifteen minutes if the spasm is very acute. Packs are continued through twelve hours of the day. No ointments are applied to the skin; burns do not occur if the packs are wrung quite dry. The acute spasm with pain will subside usually within a week if treatment is proper. Tendency of the muscle to remain in a state of contraction or

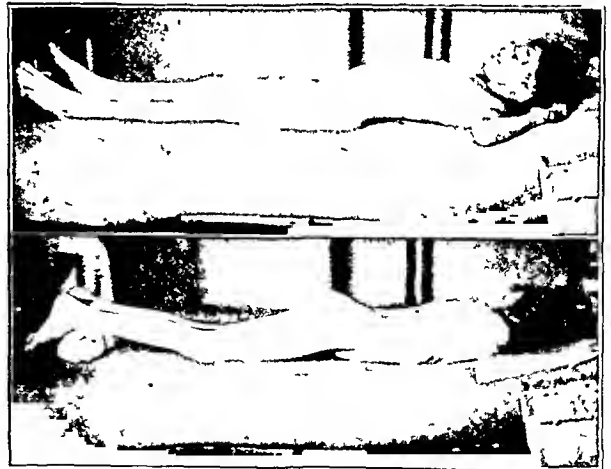


Fig. 4—Acute poliomyelitis Spasm of the hip flexor muscles causes the pelvis to tip forward

shortening may persist for weeks or months, and especially if treatment is instituted some days or weeks after the onset. Hot packs must be continued until the muscle is able to extend itself completely as evidenced by full range of motion of the joint concerned. A remarkable state of health, tonus and vigor in all the tissue of the extremity affected is preserved by this

Summary of 1940 Cases Treated by the Kenny Method

Case No.	Patient	Sex	Age in Years	Duration of Symptoms Before Beginning Treatment	Involvement		Length of Hospital Stay	Result of Treatment and Present Condition
					Paralysis	Muscle Spasm		
1	H. H.	♂	17	8 mos.	Severe both lower extremities; partial upper extremities; partial back; complete abdomen	Contractures back, hamstrings, calves, feet; scoliosis; decided incoordination of muscles	12 mos.	Contractures relieved; scoliosis improved; coordination restored; all muscles improved, walks with crutches; no apparatus; attends outpatient department three times weekly for treatment
2	L. L.	♀	5	3 days	Anterior tibials (transient)	Posterior neck, back, hamstrings, gastrocnemii	12 days	Complete relief of muscle spasm, complete restoration of muscle function; no deformities; normal child; no further treatment
3	C. R.	♂	32	3 days	Complete abdomen, complete both lower extremities	Severe neck, back, abdomen and all muscles of lower extremities	18 mos. (still in hospital)	Complete relief of muscle spasm; no deformities; full range of joint motion; recovery of abdominal muscles; lower extremities flail; stand and take few steps; daily treatment
4	D. G.	♂	7	3 days	Right scapular muscles weak; anterior neck (apparent); bulbar	Posterior neck, back, hamstrings, severe in abdominals	48 days	Complete relief of muscle spasm, recovery of paralysis; no deformities; normal child, full activity; no further treatment
5	R. G.	♂	17	24 days	Severe all extremities, chest, back and abdomen	Generalized severe, especially shoulders, hamstrings and lower extremities	9 mos.	Complete relief of muscle spasm; good recovery in all muscles except left upper extremity, walks with canes; no deformities; no apparatus; attends outpatient department two times weekly for treatment
6	D. J.	♀	19	9 days	Severe back, abdomen, both lower extremities	Posterior neck, back, hamstrings and gastrocnemii	11 mos.	Complete relief of muscle spasm; no stiffness or deformity; good recovery in back and left lower extremity; fair recovery in abdominal muscles and right lower extremity; walks with crutches; no apparatus; attends outpatient department three times weekly for treatment
7	C. C.	♀	8	1 day	Severe abdomen, both lower extremities	Severe posterior neck, back, hamstrings and gastrocnemii	9 mos.	Muscle spasm relieved; slight residual tightness of right gastrocnemius; abdomen recovered; fair recovery of most muscles of extremities; walking without braces or supports; no deformities, attends outpatient department three times weekly for treatment
8	P. S.	♂	11	33 days	Severe all extremities	Severe posterior neck, back, pectorals, hamstrings and gastrocnemii	2 mos.	All muscle spasm relieved; complete recovery of all muscles; no deformities; full activity; no further treatment
9	P. W.	♀	3	30 days	Partial generalized right lower extremity	Moderate posterior neck, back, hamstrings, right gastrocnemius	2½ mos.	All muscle spasm relieved; good improvement in all muscles; slight residual weakness of right gastrocnemius; no deformities; gait normal; no further treatment
10	D. J.	♀	9	3 days	Palate	Moderate posterior neck, back, hamstrings, right gastrocnemius; severe in adductors	33 days	All spasm relieved; no muscle weakness; no deformities; normal child; no further treatment
11	D. H.	♀	12	7 days	Total left lower extremity; moderate right lower extremity	Severe posterior neck, back, hamstrings and gastrocnemii	12 mos.	All muscle spasm relieved; recovery right lower extremity; complete residual paralysis left lower extremity; no deformities; walks well with crutches; attends outpatient department three times weekly for treatment; wears no apparatus
12	L. H.	♂	9	4 days	Slight left scapular muscles	Moderate posterior neck, back, hamstring muscles	25 days	All muscle spasm relieved; no residual paralysis; no deformities; normal child; no further treatment
13	F. S.	♂	6	3 days	Bulbar and encephalitic; very difficult swallowing and breathing; slight weakness left anterior tibial muscle	Severe posterior neck, moderate back, hamstrings and gastrocnemii	5 wks.	All muscle spasm relieved; no residual muscle weakness; no deformities; normal child; no further treatment
14	D. K.	♂	11	2 mos.	Complete right upper extremity; severe left shoulder	Contractures pectorals, biceps, trapezi and hamstrings	10 mos.	All contractures relieved; complete residual paralysis right upper extremity; improvement in left shoulder; has useful left upper extremity; no treatment at present time
15	P. G.	♀	1½	14 days	Left posterior and anterior tibials	Posterior neck, back, hamstrings; severe left gastrocnemius	10 wks.	All muscle spasm relieved; retained slight tightness of left gastrocnemius; partial return of anterior tibial; no deformity; no further treatment
16	W. K.	♂	6	2 days	None	Posterior neck, back, hamstrings; severe left gastrocnemius	10 wks.	All muscle spasm relieved; no deformities; normal child; no further treatment
17	A. A.	♀	33	5 wks.	Severe both lower legs; weakness of abdominal muscles	Contractures of gastrocnemii and hamstrings	10 mos.	Contractures improved; fair return of muscle power; walks well with crutches; no further treatment
18	J. L.	♂	7	20 days	Severe right shoulder and scapular muscles	Right pectorals major, posterior neck, back and hamstrings	8 wks.	All muscle spasm and shortening relieved; relief of paralysis of right deltoid; shoulder improved with scapula; receives home treatment
19	J. S.	♀	7	7 days	Severe generalized left lower extremity	Severe posterior neck, back, abdomen, hamstrings and gastrocnemii	13 mos.	All muscle spasm relieved; no deformities; much residual paralysis left lower extremity; walks well with crutches; attends outpatient department three times weekly for treatment; wears no apparatus
20	A. Q.	♀	15	9 days	None	Moderate posterior neck, back, hamstrings and gastrocnemii	17 days	All muscle spasm relieved; no deformities; normal child; no further treatment
21	R. L.	♂	4	7 days	Severe left lower extremity	Severe posterior neck, back, abdominals, hamstrings and gastrocnemii	7 mos.	Complete relief of muscle spasm; residual paralysis of left lower extremity; no deformities; walks well with manual assistance; attends outpatient department for treatment at intervals; parents were instructed in treating this patient
22	T. F.	♂	1½	4 days	Slight right lower extremity, generalized	Moderate in posterior neck, back, hamstrings and right calf	1 mo.	Complete relief of muscle spasm; full recovery of all muscles; normal gait; no deformities; no further treatment
23	W. C.	♂	20	3 days	Weakness right deltoid; moderate generalized both lower extremities	Right pectorals major; severe posterior neck, back, hamstring and gastrocnemii	7 mos.	All muscle spasm relieved; recovery of right deltoid; slight residual generalized weakness of lower extremities; walks well; no deformities; no further treatment

Summary of 1940 Cases Treated by the Kenny Method—Continued

Case No.	Patient	Sex	Age in Years	Duration of Symptoms Before Beginning Treatment	Involvement		Length of Hospital Stay	Result of Treatment and Present Condition
					Paralysis	Muscle Spasm		
21	R. N.	♀	9	3 days	Bulbar; oematose; no paralysis	Posterior neck, back and hamstrings	26 days	All muscle spasm relieved; no deformities; normal child; no further treatment
25	V. J.	♂	21	2 days	Weakness right shoulder and left hand; complete paralysis both lower extremities	Severe pectoralis major and severe posterior neck, back, hamstrings and gastrocnemii	15 mos. (still in hospital)	All muscle spasm relieved; recovery of shoulder; weakness intrinsic muscles of left hand; complete paralysis of both lower extremities; no deformities; stands but does not walk; daily treatment
26	M. H.	♂	20	3 mos.	All extremities when acute; chest; in respirator; moderate generalized residual weakness left upper extremity and both lower extremities	Contractures pectorals, back, hamstrings; cavus left foot; in-coordination	4 mos.	All contractures and stiffness relieved; all muscle power improved; slight residual weakness of left upper extremity and both lower extremities; no deformities; walks very well; no further treatment

method, and freedom from circulatory and trophic changes are strikingly noteworthy. Figures 4 and 5 illustrate the effect of relief of muscle spasm by the Kenny treatment when promptly applied in the acute case of poliomyelitis.

With the relief of spasm begins the true restoration of function of the normal bodily mechanics. Spasm, besides the actual damage to the muscle tissue, has a further disturbing effect on the neuromuscular system. It must be kept in mind that motion of a joint in any given plane is a matter of control by opposing muscles. As the flexor begins to contract, the extensor relaxes or pays out slack in a graduated manner so that smooth joint motion results. The extensor, however, maintains a certain amount of tonus so as to be able to reverse the motion by contracting on instantaneous notice. Opposing muscles do not ordinarily contract at the same time. A muscle in spasm is a muscle attempting to contract. Spasm in the extensor will result in relaxation of the flexor of a joint. Furthermore, the flexor will refuse to pull against the extensor which is painful. The result is that the flexor in this case ceases function, although it may be quite normal. Such a muscle appears to be paralyzed, whereas in reality it is only nonfunctioning. It has become divorced from the motor pattern or alienated from the voluntary center regulating motion. It must be restored, and it can be made to function by teaching the patient awareness of the muscle and of its normal action on the joint. This is first done by the process of stimulation, that is of exciting the proprioceptive nerve endings in the muscle and tendon which normally inform the central nervous system of the position and motion of the joint. Alternately lengthening and shortening a muscle within its normal range of contraction by moving the joint in a small arc will serve to do this, care being taken, however, not to stretch or stimulate the opposing muscle which is in spasm. This procedure may be repeated daily until such time as the spasm has been relieved in the opposing muscle by the use of the hot fomentations. The patient is then gradually retrained in the use of the alienated muscle, first being taught the position and action of the muscle, but being allowed no voluntary joint motion until proper function of the muscle has been restored. Only by insisting that the muscle contract, but purely in a mental sense at first, when it is nonfunctioning, can eventual reestablishment of smooth coordinated motion of opposing muscles be secured. After normal rhythmic action of muscles is imprinted on the motor center, the patient is allowed voluntary effort.

To allow a patient to make haphazard motions of a joint in the presence of nonfunctioning muscles is to

invite a state of incoordination. The patient makes such motions by the process of substitution. Consider the hip joint as an example. Normally the hip is flexed by the iliopsoas. The opponent is the hip extensor (hamstrings). Assume that the hip flexor ceases function. To flex the hip the patient may substitute the adductor (adductor longus, brevis and magnus). To gain mechanical advantage for these muscles in their new function, the hip is now externally rotated. Contraction of the adductors is normally associated with relaxation of the hip abductor (gluteus medius and minimus). It is unlikely that the hip extensor will pay out slack, at least smoothly, for contraction of the hip adductor if it is substituted for the flexor. Smooth motion is lost, and incoordination is established. This condition may become permanent. Only by carefully guiding every motion of the patient from the beginning of treatment can this undesirable state be avoided. The patient can be allowed no voluntary effort in muscle contraction in the presence of any incoordinated muscle action. He must be kept quiet in bed, being turned and cared for by the attendant until such time as proper muscle function is again restored. Once muscles are working in correct and harmonious action, use of the extremity serves to reinforce the nerve impulses retrained to their proper order.

The Kenny method employs no splinting of any kind. On the basis that spasm is the state affecting the muscles, it follows that splints would tend to aggravate the irritable muscle and increase the spasm. Rigid immobilization also tends to encourage shortening of muscle and resulting permanent contractures. Splinting also interferes with the application of moist heat. Most splinted extremities suffer from permanent trophic and circulatory changes because of failure of treatment of the tissues in the acute stage of the disease. The idea of splinting is to prevent contractures and deformities. While it may prevent contractures in flexion it will not prevent contractures in extension, a condition practically as damaging, as far as function is concerned. The Kenny method particularly stresses the avoidance of any form of immobilization. The patient is placed on a firm bed in the normal position of rest. This position is illustrated in figure 6. Even clothes are omitted from the patient, warmth being obtained by using flannel blankets for sheets. An upright board placed at the foot of the bed serves to stimulate the normal standing and postural reflexes. This is in no sense a splint. During the period of active spasm, usually lasting a week, and especially in the presence of any spasm of the calf muscles, the feet are not placed against the foot board. To do so would aggravate the spasm. In the 26

cases reported here no splints of any kind were applied during the entire course of treatment. It can be unreservedly stated that no deformities of any kind occurred in any of these cases as a result of the omission of splinting or immobilization.

It is well known that many patients with infantile paralysis do not have the paralytic form or recover without treatment. Recovery of these patients does not mean that the patient is restored to normal. Careful scrutiny of these patients even years after the disease will disclose that the back or hamstring muscles are still tight and shortened in many cases. Curvature of the spine and other deformities are seen to occur in these cases even when there was presumably no paralysis. While the inclusion of this type of case in the present report might seem open to question in a discussion of the therapy of infantile paralysis, the treatment of these patients is as important as it is of those who have real paralysis. Kenny treatment of this type of the disease will truly restore the patient to normal. Most of the patients are in fact better physical specimens after the training than they were prior to the attack of the disease.

Statistical comparison of the Kenny cases with any other series of cases is a practical impossibility. Paralysis occurs in each, but muscles that are soft, flexible and receptive can hardly be compared with those which are shortened, fibrosed and inelastic. A paralyzed leg which has good circulation cannot be compared with one which is cold, damp, clammy and blue. A paralyzed extremity which has full range of joint motion can hardly be compared with one which is stiff and deformed, however lifeless the muscles in the two might be. No claim is made of a cure for paralysis; there is no cure. There is no argument with the recognized concept of the relationship between the muscle fiber and the anterior horn cell of the spinal cord. A full appreciation of the value of the Kenny method can be obtained only by examination of the patients. The comfort of the patient, the warmth and life in the affected members, the absolute freedom from deformities, the

a feature of the disease, but paralysis proves after all to be a minor consideration in most cases of infantile paralysis. Muscle spasm and incoordination are far more damaging to the bodily mechanics. The Kenny method when properly applied will reduce the crippling effects of the disease of infantile paralysis. Within the



Fig. 6—Convalescent poliomyelitis basic position in bed maintained by patient during the course of treatment

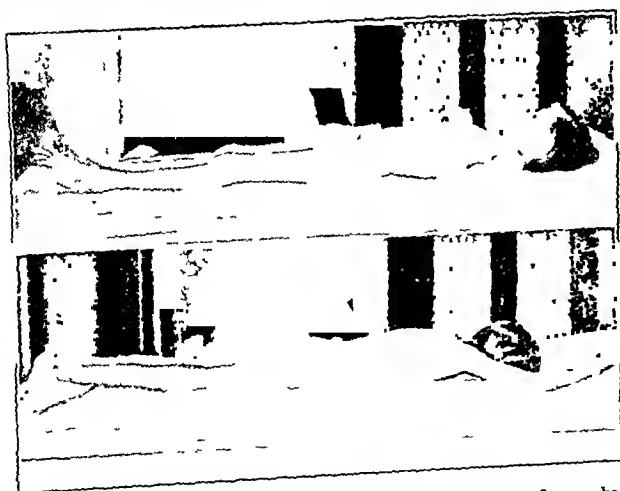


Fig. 5—Same patient as in figure 4. Spasm of the hip flexors has been relieved by the Kenny treatment. Note the correction of the pelvic tipping.

receptiveness of the weakened muscles to stimuli, the ability to walk without supports in the presence of considerable weakness, the effortless movement of joints with smooth coordinated muscle function are all points which make the Kenny method of obvious value to those faced with the task of treating and salvaging the victims of this most dreaded disease. Paralysis is unfortunately

limits of the present knowledge and means of treatment of the disease it offers the patient the maximum assurance of recovery and restoration of function of his motor system. Deformities have been outlawed.

CONCLUSIONS

As a result of the demonstration carried out at the Poliomyelitis Clinic at the Minneapolis General Hospital for eighteen months beginning in the fall of 1940, it can be stated that:

1. Miss Kenny has conclusively shown that spasm is the condition affecting the muscles in the acute stage of infantile paralysis. Spasm is the cause of deformities. Spasm causes mental alienation of muscle, a pseudo-paralysis occurring in the opposing muscles to those in spasm, in which those opposing muscles are divorced from the voluntary motor pattern and cease functioning. Spasm plus mental alienation causes incoordination of muscle action, resulting in further damage to the motor mechanism.

2. Miss Kenny has demonstrated a method of treatment for the symptoms she describes which diminishes the crippling after-effects of the disease of infantile paralysis.

3. At the end of eighteen months after beginning the Kenny treatment of a series of 26 patients in the acute and subacute stage it can be stated that these patients

have all made a far more satisfactory recovery than they would have made by any previously known method. No deformities have occurred, in spite of the complete omission of splinting.

4. The methods as demonstrated form a complete system for the treatment of the neuromuscular aspects of the disease.

5. Incorporation of the principles of the Kenny method with those of other methods for the treatment of infantile paralysis would prove unfeasible, as the Kenny method is based on previously unrecognized symptoms of the disease.

6. The method should be immediately adopted as the fundamental treatment of the disease of anterior poliomyelitis. As the condition affecting the muscles appears with the onset of the disease, it is imperative that treatment be instituted as soon as the diagnosis is established.

An additional series of 28 cases occurring in the fall of 1941, all coming under treatment in the acute stage, have presented very satisfactory progress to date. These cases will show even more remarkable recovery when viewed at the end of the treatment period. The fact that these cases were treated early and that the medical and nursing staff were better prepared to carry out treatment by virtue of the experience gained with the 1940 series will insure a maximum recovery in the 1941 series. These cases will be reported in detail later.

1945 Medical Arts Building.

THE EARLY TREATMENT OF POLIOMYELITIS

WITH AN EVALUATION OF THE SISTER KENNY
TREATMENT

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It is our purpose in this paper to discuss the treatment of anterior poliomyelitis in the acute stage as it was carried on at Willard Parker Hospital in 1941. We wish to emphasize the fact that our treatment at the present time is entirely symptomatic—more specifically that we do not use serums,¹ sulfonamides, spinal fluid drainage, electrical ionization or stimulation, or any medication intended to alter the disease process. We accept the explanation that in virus diseases the virus has already attached itself to the body cell before clinical symptoms occur. In the case of poliomyelitis, this fact was demonstrated by Kramer and Parker² in 1933, when, in the anterior horn cells of monkeys inoculated with the virus, lesions were found before the animals showed clinical signs of the disease.

We are aware of the fact that the 1941 epidemic was comparatively small in this city, but we feel that the fewer cases offered opportunity for careful study.

A total of 71 patients was treated, ranging in age from 8 months to 28 years. The cases were classified as follows: nonparalytic, 12; bulbar, 5; bulbar with neck involvement, 6; bulbar and spinal, 5; spinal, 43. No patients with cerebral manifestations were seen, and no deaths occurred.

General therapeutic measures consisted of complete bed rest, adequate fluid and vitamin intake, and sedation as necessary. In the cases in which there was bladder paralysis, catheterization was indicated and, if necessary, an indwelling catheter was used until function returned. Constipation was frequently encountered, especially in patients with paralysis of the abdominal muscles, so that enemas were given as needed; but very few cathartics were used. Laboratory procedures included complete blood counts, urinalyses and examination of the spinal fluid.

In the treatment of patients with bulbar paralysis, painstaking nursing care was essential. Patients unable to cough up or to swallow mucus which had accumulated in the pharynx were placed in the prone position with the foot of the bed elevated. This position, as suggested by Durand,³ Stimson⁴ and others, is helpful in allowing the secretions to drain from the nose and mouth. Gentle suction with a soft rubber tube was also used. These patients were fed by a Levine stomach tube until the ability to swallow returned. If vomiting occurred, parenteral fluids were given. Because of the frequent misuse of the respirator in bulbar cases, a special point is made of the fact that in respiratory distress due to mucus accumulation the respirator is not only not indicated but definitely contraindicated. This treatment of cases with bulbar involvement is not new, but because of the danger of aspiration pneumonia we feel that it should be emphasized.

Of the 12 nonparalytic cases, 2 were treated by the Kenny method, and the remaining 10 were treated by complete bed rest and discharged at the end of three to four weeks, symptom free. Eight of the latter group were seen in the follow-up clinic four months after the onset of the disease and, though apparently free from paralysis, showed, on careful examination, the presence of spastic muscle groups with resulting deformity due to muscle imbalance. In 3 of the 8 cases there was unilateral spastic involvement of the back muscles, resulting in beginning scoliosis.

Forty-eight of our patients had spinal involvement. Included in this number are those with associated bulbar paralysis. The spinal involvement ranged from a paralysis of a single muscle group to an extensive paralysis including all four extremities, intercostals, the diaphragm and the abdominal muscles. Thirty-one patients were treated by orthodox methods from August 8 until September 23. On admission, a detailed muscle analysis was not done; hence, in the summary given, loss of function rather than single muscle involvement is described. Thus, of 27 patients, there were noted inability to flex the neck, 5; inability to abduct the arm, 5; inability to flex or extend the forearm, 16; finger and hand weakness, 3; gluteal weakness, 2; respiratory distress (due to paralysis of intercostals and diaphragm), 1; weakness of lower extremities, 22; inability to void urine, 3. As mentioned previously, in a given patient this involvement varied from a single paralysis to an extensive paralysis of several muscle groups.

From the Willard Parker Hospital.
Read before the Pediatrics Section, New York Academy of Medicine,
March 12, 1942.

1. International Committee for the Study of Infantile Paralysis: Poliomyelitis, Baltimore, Williams & Wilkins Company, 1932, pp. 238-241.

2. Kramer, S. D., and Parker, G. C.: Experimental Poliomyelitis: Evidence of Early Involvement of the Central Nervous System, *Proc. Soc. Exper. Biol. & Med.* 30:1417 (June) 1933.

3. Durand, Jay L.: Postural Treatment in Bulbar Infantile Paralysis, *J. A. M. A.* 93:1044 (Oct. 5) 1929.

4. Stimson, P. M.: *Common Contagious Diseases*, ed. 3, Philadelphia, Lea & Febiger, 1940.

Toronto splints⁵ and plaster casts were used for immobilization. In this group of patients atrophy, often pronounced, and deformities were noted during the second and third weeks. As is customary, these patients in the third to the sixth week of their disease were transferred to various orthopedic hospitals for further treatment. Seventeen were seen four to five months after being transferred. In every case we found limitation of motion due to tight and contracted muscles. In almost every instance there was gross substitution and muscle incoordination. That the contractures were apparently due to the immobilization may be demonstrated in the following illustration:

A 3 year old patient was admitted with complete paralysis of the deltoid and only minimal weakness of the biceps and triceps. Forearm extension and flexion could be performed actively by the patient. The involved arm was placed in a Toronto splint with the arm flexed at the elbow at an angle just over 90 degrees. Six weeks later the strength of these muscles was unchanged, i. e. the deltoid paralysis continued, as did the minimal weakness of the biceps and triceps. At that time the patient was able to flex the forearm, but neither passive nor active extension was possible beyond an angle of 90 degrees. The biceps tendon was somewhat rigid on palpation. These findings suggest that this limitation of motion was a result of continued biceps spasm during the immobilization.

Similarly, in all cases in which leg splints or casts were applied there was definite loss of motion at the knee due to contracture.

KENNY METHOD

As described in the American Literature by Cole and Knapp,⁶ Sister Kenny emphasizes three cardinal symptoms in poliomyelitis: primarily muscle spasm and subsequently muscle incoordination and mental alienation. The symptomatic treatment of these three manifestations by means of hot packs, passive motion and muscle reeducation comprises the Kenny treatment.

So that this terminology may be clearly understood, the following illustration is given:

In a patient with apparent paralysis of the deltoid, one finds spasm in antagonistic muscles such as the pectoralis and the latissimus dorsi, and in substituting muscles such as the suprascapular group. If such a patient attempts to abduct the arm, the aforementioned spastic muscles contract further, resulting in an incoordinated movement. Continued active attempts at abduction result in further alienation of the involved muscle—the deltoid—and further tightening of the spastic muscles.

At the Willard Parker Hospital the Kenny treatment was carried out in the following way: A careful physical examination was done to evaluate the extent of weakness and the sites of hyperactive spastic muscles. Bed boards were placed under all mattresses, and a box was put at the foot of the bed, against which the patient was instructed to place the soles of his feet. He was encouraged to lie in bed with his extremities in the same position as in standing. No pillows were permitted. When the patient was lying on his abdomen, the box was removed and the feet were allowed to protrude over the end of the mattress. Hot packs were applied wherever spastic muscles were found. The entire back, from the head to the heels, was invariably included in the spasticity. These packs consisted of pieces of flannel or old blankets which were dipped in

hot water, about 110 to 120 F., wrung dry by hand and applied directly to the involved part. These were then covered with a dry blanket. Packs were applied for fifteen minutes every two hours during the day and every four hours at night. During a fifteen minute period a pack would be reheated about four times. This technic varies somewhat in detail from Sister Kenny's present technic, but the principle is the same.

Passive exercises were started on the first day of the treatment; the range of motion extended to the point of pain or spasm. Several passive movements were executed for each involved muscle group twice daily. After three or four days, when pain and tenderness were greatly reduced, reeducation was begun. Patients over 3 years of age were allowed to feel the difference between a relaxed and a contracted muscle. The paralyzed or "alienated" muscle was then indicated and attention called to its point of insertion. When the involvement was unilateral, this step was often simplified by using the nonparalyzed side for comparison and demonstration. During the passive movements the patient was instructed to relax completely, focus his attention on the selected muscle, especially its insertion, and try to establish a mental awareness of the action of that muscle. When a muscle responded during passive exercises, gradually increasing tone in the muscle and its tendon was noted by the examiner. In regions where the tendons lie close to the surface, such as the dorsiflexors of the feet and toes, this increasing tone was visible.

At the end of the passive exercises, the patient was permitted to attempt one active movement. When substituting groups contracted during passive or active movements, the patient was instructed to relax and, if he was unable to cooperate, reeducation was abandoned for that day and more frequent hot packs were applied. At the onset, muscle reeducation was carried out twice daily and, as the patient improved, once daily. The range of passive motion was gradually increased as pain and spasm subsided. Hot packs were given during this entire period and complete bed rest continued. All active movements were assisted, and were not performed against resistance or gravity. During our period of observation, which was up to two and one-half months, many muscle groups remained under this regimen, while others were allowed to progress to the stage of independent active motion. The indications used at Willard Parker Hospital for beginning this next state were:

1. No evidence of spasm during full range of passive motion in (a) the selected muscle or muscle groups, (b) antagonistic groups, (c) substituting groups.

2. Ability to perform a coordinated active movement without substitution.

In this arbitrarily named second stage of treatment the hot packs were discontinued and more activity was permitted. If, at any time, spasm recurred in the selected group or related muscle groups, or if substitution was noted, the first stage of treatment was resumed. Careful observation was essential throughout the entire period of hospitalization so that beginning spasm in previously uninvolved areas might be detected and treated early. Especially important was that time when weight bearing had first been permitted.

Extent of improvement was judged by absence of atrophy and substitution, as well as by the return of function and strength.

5. Supplied by the National Foundation for Infantile Paralysis.
6. Cole, W. H., and Knapp, M. E.: The Kenny Treatment of Infantile Paralysis, J. A. M. A. 116: 2577-2580 (June 7) 1941.

OBSERVATIONS ON THE KENNY TREATED PATIENTS

On September 23 the Kenny treatment was started at Willard Parker Hospital. Eventually all patients present in the hospital at that time and all subsequent new admissions were included, giving a total of 28 cases, which were classified as follows: nonparalytic, 2; bulbar and spinal, 4; bulbar with only neck involvement, 5; spinal, 17. Fourteen of these patients received the treatment from admission; the remaining 14 were started at times which varied from the first to the seventh week of illness. So that a comparison may be made of the total involvement of this group with that of the earlier group which received orthodox treatment, the following summary is presented. (A detailed analysis of the paralytic and spastic involvement is given in the individual case histories.) Thus, in 26 paralytic cases, there was noted inability to flex the neck, 12; inability to abduct the arm (paralysis of entire shoulder girdle), 5; inability to flex or extend the forearm, 10; weakness of intrinsic finger and hand muscles, 1; respiratory distress (intercostals 2, diaphragm 2), 4; pronounced scoliosis (quadratus lumborum weakness), 1; paralysis of the abdominal muscles, 6; paralysis of the lower extremities, 20.

Of the 28 patients, 2 were nonparalytic. One (patient 44) showed pronounced spasm of the dorsum of the neck, the back and the hamstrings, which responded to treatment within three weeks. Three months after the onset of the disease there was no evidence of scoliosis. There was no follow-up on the other.

Two patients (58 and 59) showed an interesting picture. Both were boys, 13 and 19 years of age, respectively, with well developed muscular systems. On admission, 1 had minimal weakness of the abductors of the left thigh, while the other had minimal weakness of the right quadriceps, hamstrings and gastrocnemius. In neither of these patients could weakness be detected at the end of the second week of the illness. Though the clinical course was extremely mild, both patients showed such severe spasm of the dorsum of the neck, the back and the hamstrings that active and passive flexion of the trunk was impossible. These patients received hot packs during the first two weeks, and thereafter the packs were supplemented with one to three hot baths daily. In the sixth week of the illness these patients were able to flex the trunk when the knees were extended. This action at that time, however, was still limited greatly by the spasm.

In 12 cases there was inability to flex the neck and severe spasm of the dorsum of the neck. Five of these were bulbar cases, 4 were spinal cases and 3 showed bulbar and spinal involvement. In this group the date of onset varied from August to December. The two latest patients are still showing signs of improvement, while the remaining 10 patients have shown good to excellent return of function and power. Atrophy was seen in 2 patients in whom the Kenny treatment was begun in the fifth and seventh weeks of illness. It is interesting to note in this group that the extent of improvement seems directly proportional to the time of introduction of the Kenny treatment; i. e., in those patients so treated from the onset of their disease, lack of atrophy and substitution is a constant observation.

There were 4 patients with complete deltoid paralysis. One of these (patient 67) had extensive paralysis of the entire upper extremity, including the shoulder girdle, and showed spasm in the pectoralis, latissimus dorsi and triceps on the affected side. This presence of spasm in completely paralyzed muscles was noted

frequently. At the end of seven weeks this patient had complete range of passive motion of the involved arm but continued to show complete paralysis. However, at that time beginning contractions could be felt in the involved muscles during passive exercises. When seen in the twentieth week of the disease, there was beginning return of function in the muscles of the hand and forearm. Two patients (53 and 54) with deltoid paralysis had contractions on passive motion in the second and third weeks of the disease, and these patients showed return of deltoid function four months after the onset with minimal weakness and substitution. The fourth patient in this group (patient 63) had congenital hemangiomas of the involved arm, and at the time of discharge there had been no return of deltoid function.

There were 10 patients with paralysis of the dorsiflexors of the foot. At the end of four months, 2 of these patients (68 and 70) still showed complete paralysis. However, there was minimal atrophy and substitution, and no contracture of the achilles tendon. The other 8 patients had return of function. At the end of four months there seemed to be fair to good return of strength in all the muscles. Only 1 patient (patient 62) showed a deformity which was minimal in the third month. This patient had been admitted in the second week of his disease with beginning contracture of the achilles tendon. During the treatment this deformity became less apparent. It is interesting that his clinical course at home had been mild and that the diagnosis of poliomyelitis was not suspected until a limp was noted when the child was allowed out of bed.

Three patients (55, 61 and 66) had apparent intercostal paralysis with resulting difficulty in breathing. All had pronounced pectoral spasm. The respiratory rate of 1 of these patients remained at 12 per minute for a period of over eighteen hours. Frequent packs were applied to the spastic pectoral muscles. Coincident with the relaxation of these muscles, as determined by passively abducting the arms, there was return of normal chest excursion.

Four patients had pronounced paralysis and 3 showed some weakness of the anterior abdominal muscles. It was in this group of patients that persistent constipation was noted. We feel that involvement of the abdominal muscles is easily overlooked in the acute stage, as evidenced by its infrequent mention in many of the detailed reports of larger epidemics. Because of the persistent spasm of the back and hamstrings, return of function in the abdominal muscles is difficult to evaluate at this time.

One patient (patient 57) presented a decided left lumbar scoliosis on admission. This was associated with spasm of the right quadratus lumborum and apparent paralysis of the left quadratus lumborum. At the end of three weeks there was no evidence of scoliosis when the patient was at rest, and at the end of four months there was no deformity seen when the patient was in the sitting position.

Fourteen patients had paralysis of the thigh muscles, including the quadriceps, hamstrings, adductors and abductors. Since the leg involvement was bilateral in some patients a total of 20 lower extremities were involved. Only 1 of these patients failed to show any return of function after four months. No limitation of passive motion and hence no contracture deformities were found in this group four months after onset. Two of the patients have minimal atrophy. As has been

pointed out by Sister Kenny, spasm of the adductors and of the sartorius was frequently detected in this group, even when these spastic muscles had complete loss of power and function.

Ten patients were seen with involvement of arm muscles, usually biceps and triceps paralysis, with supinator and pronator weakness. Only 1 patient (patient 67) failed to show appreciable return of function. In this case paralysis of the deltoid was present and was described with that group of cases. The remaining 9 patients, seen four months after the onset, showed return of useful function and strength. Movements were well coordinated, and no spasm or substitution was seen.

It is still too early to make any statement as to the eventual recovery in these 26 paralytic cases. However, the following observations have been summarized:

1. Spastic muscles were found in all patients. This spasm was noted in otherwise uninvolved muscles as well as in weak and paralyzed muscles. It was relieved by hot packs.

2. In general, the return of unrestricted passive motion took place weeks and months earlier than when orthodox treatment with splinting was used.

3. Complete comfort, at rest, was enjoyed by all patients after one to three days of hot packs. Older patients, especially those who had been in splints, remarked on the comforting effect. Sedation was practically never necessary in this group.

4. In performing passive exercises with a completely flaccid muscle, the examiner would feel tone in that muscle long before the patient became aware of it, and frequently several weeks before the patient had any voluntary control over the muscle.

5. During the period of recovery the patient frequently illustrated what Sister Kenny calls "mental alienation." Although able at the end of one day's exercises to perform a coordination action with a given muscle or muscle group, the patient would completely forget on the following day how that action was performed. However, after several passive motions the patient would again remember the action.

6. In 4 patients under 3 years of age, no attempt at substitution was noted. When muscle function returned in these patients, coordinated movements were seen.

7. While six to nine packs in twenty-four hours of the type described were adequate for relaxation, three to four were not, as was evidenced when there was a temporary diminution in the nursing personnel. During this time an increase in the amount of spasticity was noted in practically every patient.

8. The tendency toward atrophy and deformity was minimal in this group. In fact, it was rarely seen in patients treated from the onset of the disease. The general condition of the skin and muscles was excellent. No burnus occurred.

CASE HISTORIES

ORTHODOX TREATMENT

NONPARALYTIC

CASE 1.—R. E., a 16-year old white youth, admitted on Sept. 4, 1941 with a three day history of sore throat, fever up to 104 F., pain in back of neck, general malaise, diplopia, and a constricting feeling in the throat, had had a left mastoidectomy in 1925, repeated in 1936. He had slight cyanosis of the lips and finger tips, absent ankle and knee jerks and upper abdominal reflexes, pain in the lumbar spine on flexing the head; no weakness. There was a low grade fever for one week; the

course otherwise was uneventful. Treatment, bed rest. Spinal fluid, 100 cells per cubic millimeter; 98 per cent monocytes; protein 29 mg. per hundred cubic centimeters. Discharged, September 19. Follow-up, Dec. 17, 1941, occasional difficulty in swallowing.

CASE 2.—F. C., a 10 year old white boy, admitted on Aug. 7, 1941 with a three day history of headache, loss of appetite, vomiting and pain in the back on flexing the neck, had slight nuchal rigidity; temperature, 101 F.; no absent reflexes. The course was afebrile after the first day. Treatment, bed rest. Spinal fluid, August 5, 270 cells per cubic millimeter; 60 per cent lymphocytes; 40 per cent polymorphonuclears; protein 27 mg. per hundred cubic centimeters; August 8, 26 cells per cubic millimeter; 100 per cent monocytes; protein 78 mg. per hundred cubic centimeters. Discharged August 19. Follow-up, Dec. 22, 1941, right hamstring "tightness" on trunk flexion; left shoulder lower than right; slight right dorsal scoliosis.

CASE 3.—J. O., a 6 year old white girl, admitted to the hospital on Aug. 17, 1941 with a two day history of stiff neck, vomiting, fever, loss of appetite and inability to "move the legs" on the day prior to admission, had thick speech, no weakness; biceps reflexes were diminished but equal; the right triceps reflex was absent, the left triceps reflex diminished; ankle jerks and knee jerks more equal and active. A low grade fever continued sporadically for nineteen days. Treatment, bed rest. Spinal fluid, August 17, 160 cells per cubic millimeter; 60 per cent lymphocytes; 40 per cent polymorphonuclears; protein 39 mg. per hundred cubic centimeters. Discharged September 7. Follow-up, left sternomastoid smaller and weaker than right.

CASE 4.—D. N., an 11½ year old white girl, admitted to the hospital on Aug. 22, 1941 with a six day history of fever, headache, stiff neck, vomiting and drowsiness, did not appear acutely ill. There was slight nuchal rigidity, with mild pharyngeal injection, absent right abdominal reflexes and no weakness. There was a low grade fever for one day. Treatment, bed rest. Spinal fluid, August 29, 20 cells per cubic millimeter; 100 per cent monocytes; protein 26 mg. per hundred cubic centimeters. Discharged September 2. Follow-up, Dec. 30, 1941, physical examination negative.

CASE 5.—A. K., a 16 year old white boy admitted to the hospital on Aug. 29, 1941 with a two day history of fever, headache, stiffness of neck and back and nausea, had fever up to 102 F. for three days and persistent neck stiffness. Treatment, bed rest. Spinal fluid, 160 cells per cubic millimeter; 100 per cent monocytes; protein 55 mg. per hundred cubic centimeters. Discharged October 4. Follow-up, Dec. 22, 1941, spasm of right gastrocnemius, left sartorius and left hamstrings; spasm of dorsum of neck.

CASE 6.—D. D. (brother of G. D., patient 22), a 15 year old white boy, admitted on Sept. 5, 1941 with a two day history of fever and headache, had nuchal rigidity and bilateral hypoaffective knee jerks. He had fever the first day. Treatment, bed rest. Spinal fluid, 75 cells per cubic millimeter with 98 per cent monocytes; protein 36 mg. per hundred cubic centimeters. Discharged September 25. Follow-up, Dec. 17, 1941, occasional pain and spasm in right thigh adductors; spasm of hamstrings, dorsum of neck, trapezius, sternomastoids and platysma.

CASE 7.—M. A., a 14 year old white boy, admitted Sept. 21, 1941, the fifteenth day of illness, became ill with sore throat and general malaise, the temperature rising to 102 F. during the first week. There was slight nuchal rigidity. The course was afebrile. Treatment, bed rest; occasional hot packs during the fourth week of illness. Spinal fluid, 25 cells per cubic millimeter; 100 per cent lymphocytes; protein 78 mg. per hundred cubic centimeters. Discharged on October 7. Follow-up, Dec. 22, 1941, patient complained of "occasional tightness" of right hamstrings; left shoulder lower than right; beginning right dorsal scoliosis; mild spasm of hamstrings.

CASE 8.—P. B., a 9 year old white girl, admitted on Aug. 18, 1941 with a three day history of fever, sore throat, vomiting, and pains in both arms and the neck, had a moderately injected pharynx. The temperature rose to 101 F. on the first day. Treatment, bed rest. Spinal fluid, 105 cells per cubic millimeter; 90 per cent monocytes; protein 45 mg. per hundred cubic centimeters. Discharged on August 30. Follow-up, Nov. 5,

1941, absent right knee jerk; spasm of sternomastoids. Dec. 17, 1941, poor posture; slight dorsal curvature to the right on flexion.

CASE 9.—S. R., a 12 year old white girl, admitted on Sept. 18, 1941 with a three day history of headache, dizziness and fever, had nuchal rigidity. There was a low grade fever for three days. Treatment, bed rest. Spinal fluid, 70 cells per cubic millimeter; 95 per cent monocytes; protein 63 mg. per hundred cubic centimeters. Discharged on Oct. 4, 1941. No follow-up.

CASE 10.—R. McC., an 8 year old white girl, admitted on Sept. 25, 1941 with a seven day history of fever, sore throat and stiff neck, had slight nuchal rigidity. The temperature rose to 102 F. for five days. Treatment, bed rest. Spinal fluid, 75 cells per cubic millimeter; 100 per cent monocytes; Pandy test positive. Discharged on Oct. 10, 1941. No follow-up.

BULBAR

CASE 11.—E. S., a 4 year old white girl admitted on Sept. 22, 1941 with a three day history of pains in the arms and legs, general malaise and nasal regurgitation, had been given 35 grains (2.25 Gm.) of sulfadiazine prior to admission. Tonsillectomy had been done fourteen days before onset of the disease. The patient was acutely ill; there was nasal regurgitation; speech was nasal. The temperature was up to 101.6 F. for three days. Treatment was symptomatic as described. Feedings were given by the Levine tube for five days. Spinal fluid, 80 cells per cubic millimeter; 100 per cent monocytes; protein 18 mg. per hundred cubic centimeters. Discharged on Oct. 7, 1941. No follow-up.

CASE 12.—L. F., a 14 year old white girl, admitted on Sept. 17, 1941 with a three day history of nausea, vomiting, dizziness, headache, sore throat and inability to swallow, was acutely ill; there was nuchal rigidity; paralysis of the left palate was present. Speech was nasal. The temperature rose to 102 F. for five days. On the fifth day the respirations gradually became depressed and finally ceased for forty-five seconds. An immediate lumbar puncture was performed and a small amount of spinal fluid removed, not under increased pressure. Caffeine was given. The patient responded and after a twelve hour period the respirations were within normal limits. Left facial paralysis was noted on the ninth day. Nasal speech persisted and was present at the time of discharge. Treatment was symptomatic; feedings were by the Levine tube for four days. Spinal fluid, 140 cells per cubic millimeter; 90 per cent monocytes; protein 68 mg. per hundred cubic centimeters. Discharged on Oct. 8, 1941. No follow-up.

CASE 13.—J. B., a 13 year old white boy, was admitted on Sept. 1, 1941 with a six day history of nausea and vomiting and a three day history of stiff neck and sore throat. There were nuchal rigidity, nasal voice, nasal regurgitation and paralysis of the right palate. The temperature rose to 102 F. for three days. Right facial weakness was noted on the twenty-fifth hospital day. Treatment was symptomatic; feedings were given by the Levine tube for six days. Spinal fluid, 50 cells per cubic millimeter; 100 per cent mononuclears; protein 42 mg. per hundred cubic centimeters. Discharged on September 24. Follow-up, Dec. 22, 1941, nasal speech; weakness of right palate; right lower facial weakness; weakness of both sternomastoids, left weaker than right; substitution noted on neck flexion; weakness of lower abdominal muscles.

CASE 14.—A. H., a 10 year old white boy, was admitted on Aug. 15, 1941 with a two day history of vomiting, headache, stiff neck, nasal speech and difficulty in swallowing. There were slight nuchal rigidity, mild pharyngeal injection, nasal voice, paralysis of the left palate and nasal regurgitation. A low grade fever persisted for three days. Treatment was symptomatic; feedings were given by the Levine tube for four days. Spinal fluid, 38 cells per cubic millimeter; 80 per cent polymorphonuclears; 20 per cent lymphocytes; protein 39 mg. per hundred cubic centimeters. Discharged to convalescent home on September 25. Follow-up, Dec. 17, 1941, revealed that occasional "pins and needles" sensation in both lower extremities associated with weakness and "muscle pain" in right thigh had been noted by the patient. There were weakness of the left palate and slight rotation of the dorsal spine to the left, not notable after exercise.

CASE 15.—Z. M., a 10 year old white boy, admitted on Sept. 10, 1941 with a five day history of headache, fever, pain in the back and nasal regurgitation, had nuchal rigidity, weakness of the right palate and nasal regurgitation. The temperature rose to 101 F. for three days. Treatment was symptomatic. Levine tube feedings were not necessary. Spinal fluid, 170 cells per cubic millimeter; 95 per cent mononuclears; protein 45 mg. per hundred cubic centimeters. Discharged on October 2. Follow-up, Dec. 17, 1941, stuttering had been noted since discharge. The posture was poor; there was weakness of the right palate.

BULBAR WITH NECK WEAKNESS

CASE 16.—E. B., an 11 year old white boy, admitted on Sept. 11, 1941 with a four day history of headache, vomiting, stiff neck, difficulty in swallowing and nasal speech, was acutely ill; right palatal paralysis was present and the gag reflex was absent. Temperature rose to 101.2 F. for four days. Sternomastoid weakness was noted on September 28. Feedings were given by the Levine tube for eight days. Treatment was symptomatic. Spinal fluid, 34 cells per cubic millimeter; 100 per cent monocytes; protein 39 mg. per hundred cubic centimeter. Discharged on Oct. 5, 1941. No follow-up.

BULBAR AND SPINAL

CASE 17.—E. R., a 6½ year old white girl, admitted on Aug. 16, 1941 with a three day history of headache, stiff neck, sore throat and difficulty in speaking, was acutely ill; right palatal weakness, a loud systolic murmur over the entire precordium and some cardiac enlargement were present; there was no difficulty in swallowing. Temperature rose to 102 F. for two days. Weakness of the anterior abdominal muscles had been noted during the last week. Treatment was symptomatic; parenteral fluids were given. Spinal fluid, 70 cells per cubic millimeter; 80 per cent lymphocytes; protein 28 mg. per hundred cubic centimeters. Discharged on Aug. 29, 1941. Follow-up, Dec. 11, 1941, spasm of the back muscles and weakness of the abdominal muscles; patient wearing a surgical corset for weakness of the anterior abdominal muscles.

SPINAL

CASE 18.—L. L., a 7½ year old white boy, admitted on Aug. 13, 1941 with a three day history of stiff neck, fever, constipation and weakness of the right arm, had absent left biceps and both triceps reflexes, weakness of the right biceps and triceps, poor grip and weakness of the interossei. The patient was placed on a Bradford frame with the right arm placed in a Toronto splint; arm removed every four hours for "skin care." There was beginning return of muscle power on September 4. Spinal fluid, 50 cells per cubic millimeter, 75 per cent lymphocytes; protein 32 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 13, 1941. Follow-up, February 1942, limitation of motion at elbow, weakness and atrophy of intrinsic muscles.

CASE 19.—S. S., an 18 month old white boy, admitted on Aug. 23, 1941 with an eight day history of fever, irritability and weakness of the right leg, had flaccid paralysis of the entire right leg with no atrophy or muscle tenderness. The course was afebrile. A plaster cast was applied to the right leg on August 27. Spinal fluid, 80 cells per cubic millimeter; 95 per cent lymphocytes; protein 18.8 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital Sept. 22, 1941. Follow-up, February 1942, good cosmetic result; fair return of function.

CASE 20.—M. R., a 3½ year old white boy, admitted on Aug. 18, 1941 with an eight day history of headache, stiff neck, irritability, fever and weakness of the right leg, had paralysis of the right leg and weakness of the left leg. Temperature rose to 100.4 F. daily for three and one-half weeks. Treatment, casts applied to both legs. Lumbar puncture was not done. Transferred to Orthopedic Hospital on Sept. 1, 1941. Follow-up, March 1942, atrophy of the right leg; shortening of the Achilles tendon on the right; muscle power good; left leg normal.

CASE 21.—M. McL., a 17 year old white youth, admitted on Aug. 26, 1941 with a three day history of fever and stiffness of the neck and back, had nuchal rigidity, weakness of both quadriceps and both peroneal groups, weakness of the right thigh adductors and abductors and complete paralysis of the right

hamstrings; he was unable to lift either leg off the bed. Temperature rose to 103.2 F. for one week. Casts were applied to both legs. Spinal fluid, 42 cells per cubic millimeter; 50 per cent mononuclears; protein 83 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 20, 1941. Follow-up, March 1942, limitation of motion at the right knee and right hamstring contracture.

CASE 22.—G. D. (brother of D. D., patient 6), a 3 year old white boy, admitted on Aug. 28, 1941 with an eight day history of fever, pain in the back of neck and weakness of the right foot, had paralysis of the right lower leg. Temperature occasionally rose to 100.2 F. during the first two weeks. The patient was placed on a Bradford frame and the right leg placed in a Toronto splint. Spinal fluid, 72 cells per cubic millimeter; 70 per cent lymphocytes; protein 62 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital Sept. 26, 1941. Follow-up, March 1942, moderate atrophy of the right lower leg; shortening of the right achilles tendon.

CASE 23.—E. A. B., a 6 year old white girl, admitted on Aug. 28, 1941 with a three day history of vomiting, fever, headache and weakness of the left arm, had paralysis of the left deltoid, weakness of the upper trapezius, biceps and triceps, poor grip and inability to flex the head. Temperature rose to 103 F. for two days. The patient was able to lift the head on September 16. Treatment, Bradford frame; left arm in a Toronto splint. Spinal fluid, 160 cells per cubic millimeter; 100 per cent lymphocytes; protein 35 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 26, 1941. No follow-up.

CASE 24.—L. C., a 3 year old white girl, admitted Aug. 8, 1941 with a six day history of fever, irritability, numbness and finally paralysis of the left arm, had weakness of the entire left arm with slight power in the hand and fingers. There was improvement in the power of the grip during the hospital stay. Treatment, Bradford frame; Toronto splint to the left arm. Spinal fluid, 170 cells per cubic millimeter; 80 per cent mononuclears; protein 43 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 12, 1941. Follow-up, March 1942, limitation of motion at the elbow; power of muscles returning; gross substitution in abducting arm.

CASE 25.—A. B., an 8 year old Negro boy, admitted on Aug. 14, 1941 with a three day history of headache, abdominal pain and inability to walk on the right leg, had nuchal rigidity and complete paralysis of the right leg. Temperature occasionally rose to 100 F. Treatment, Bradford frame; right leg in a Toronto splint. Spinal fluid, 165 cells per cubic millimeter; 95 per cent monocytes; protein 47 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital Sept. 17, 1941. Follow-up, March 1942, limitation of motion at knee; atrophy of thigh and calf muscles; function poor; supports weight with decided limp.

CASE 26.—V. C., a 5 year old white boy, admitted on Aug. 16, 1941 with a five day history of pain, fever, vomiting and paralysis of the right arm, had complete paralysis of the right arm and shoulder, weakness of the entire left arm and shoulder, nuchal rigidity and inability to flex the neck. The course was afebrile. The patient was irritable until casts were applied. Treatment, cast applied which covered neck, both arms and trunk. Spinal fluid, 80 cells per cubic millimeter; 80 per cent lymphocytes; protein 29 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 23, 1941. Follow-up, March 1942, left upper extremity: atrophy, deltoid function fair, substitution with upper trapezius; right upper extremity: considerable atrophy, very slight deltoid function, flexion contractions of fingers, vascular changes in hand.

CASE 27.—Y. D., a 3½ year old white girl, admitted on Aug. 2, 1941 with a six day history of "sore throat," fever, weakness, inability to lift the left arm and pain in the abdomen, had complete paralysis of the left upper arm and forearm muscles and weakness of the left hand. Weakness of the right arm and neck developed during the first week of hospitalization. Temperature rose to 101 F. for three days and to 100.4 F. nightly for three weeks. The patient was placed on a Bradford frame with Toronto splints applied to both arms. Spinal fluid, 110 cells per cubic millimeter; 98 per cent monocytes; protein

73 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 25, 1941. Follow-up, February 1942, right arm essentially normal; poor cosmetic result of left hand, with some vascular disturbance; scapular rotation during abduction of arm; function poor; substitution noted.

CASE 28.—H. P., a 5 year old white girl, admitted on Aug. 21, 1941 with a five day history of "limping on right foot" and vomiting, had paralysis of the right iliopsoas and quadriceps and "tightness" of the right hamstrings and paralysis of the dorsiflexors. The course was afebrile. A cast was applied to the right leg. Spinal fluid, 60 cells per cubic millimeter; 100 per cent monocytes; protein 30 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Oct. 2, 1941. Follow-up, February 1942, abduction limp, shortening of the right hamstrings.

CASE 29.—H. M., a 16 year old white youth, admitted on Aug. 26, 1941 with a four day history of headache, stiff neck, weakness of both legs and inability to void, was acutely ill and had nuchal rigidity. Both legs were paralyzed completely and the bladder was distended. A retention catheter was applied from day of admission to September 6. Sulfathiazole was given in average doses to prevent possible urinary infection, and discontinued after twenty-four hours because of gross hematuria. Casts were applied to both legs. Spinal fluid, 200 cells per cubic millimeter; 100 per cent monocytes; Pandy test positive. Transferred to Orthopedic Hospital on Oct. 3, 1941. Follow-up, February 1942, quadriiceps shortening; limitation of motion at knee; function poor.

CASE 30.—A. T. (brother of F. T., patient 31), an 8 month old white boy, admitted on Aug. 16, 1941 with a five day history of fever, irritability and "paralysis" of the left leg, was pale, malnourished and had left "foot drop" and nuchal rigidity. The course was afebrile. There was a progressive weight gain. A cast was applied to the left leg. Spinal fluid, 22 cells per cubic millimeter; 100 per cent monocytes; protein, 114 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Oct. 3, 1941. Follow-up, March 1942, considerable atrophy; left achilles contracture; shortening of the left hamstrings.

CASE 31.—F. T. (brother of A. T., patient 30, with significant family history: three siblings have a muscular dystrophy), a 3 year old white boy, admitted on Aug. 12, 1941 with a four day history of fever, weakness of the right leg and "incontinent of feces," whose calf muscles had been getting large during the year prior to admission but no weakness had been observed before present illness, was acutely ill and was unable to void. Nuchal rigidity and paralysis of the right leg were present. Bladder function returned one week after admission. Temperature rose to 101 F. for three days. Treatment, catheterization; Toronto splint applied for nineteen days, then cast was applied. Spinal fluid, 85 cells per cubic millimeter; 95 per cent monocytes; protein 34 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Oct. 10, 1941. No follow-up.

CASE 32.—H. T., a 17 year old white youth, with an eleven day history of nausea, vomiting, diarrhea, fever, headache and stiff neck, had been admitted to a local hospital on Aug. 18, 1941 and transferred to Willard Parker Hospital on August 21 when pain and paralysis of the lower extremities developed. Nuchal rigidity, bilateral spasm of the hamstrings and paralysis of both lower extremities were present. On August 24 respirations became shallow and labored, owing to diaphragmatic paralysis and intercostal weakness. On September 1 the intercostals were also paralyzed, as were the abdominal muscles. Loss of weight was rapid and the patient remained cachectic during the entire hospital stay. He was placed in a respirator on August 24 and was there continuously until September 26, when he was able to remain out of the respirator for thirty minutes to one hour at a time. During this period the patient's course was "stormy." Mucus accumulated in the pharynx, which the patient was unable to cough up. Frequent bouts of vomiting and abdominal pain occurred. On two occasions the patient appeared moribund and while in the respirator became cyanotic.

On October 15 hot packs were started to the entire body but given more frequently to the chest and abdomen. One week later, chest excursion was increased. At the onset of this

treatment the patient was "rigid" and could not be moved without pain. A gradual improvement in comfort and outlook was noted. During the first week in December, when some relaxation had been accomplished, an attempt at complete evaluation of the muscles showed complete paralysis of both lower extremities with the exception of the right sartorius and iliopsoas and left plantar flexors of the toes. The diaphragm and abdominal muscles were paralyzed. Chest excursion was greater on the left side than on the right. Accessory muscles of the neck and shoulders were used with each respiration. Muscles of the left upper extremity were good and those of the right fair. Contractures were noted throughout the entire body, so that passive motion to any degree was not possible. On December 20 the patient was removed from the respirator.

Examination of the spinal fluid showed 127 cells per cubic millimeter; 78 per cent polymorphonuclears; 22 per cent lymphocytes; protein 46.3 mg. per hundred cubic centimeters.

The patient was transferred to the Orthopedic Hospital on Jan. 20, 1942.

A follow-up examination was made in March 1942. Some weight gain was noted. The patient was able to roll over in bed. Accessory muscles of respiration were not used as extensively when the patient was at rest. Passive motion could be carried out to a greater degree. There was no pain. Atrophy was extreme. There was considerable shortening of the thigh adductors, hamstrings and pectoral muscles.

N. B.: This case is not included with those in which the Kenny treatment was given because until further relaxation takes place the necessary passive exercises and reeducation cannot be carried out.

CASE 33.—M. M., a 7 year old white boy, admitted on Sept. 15, 1941 with a five day history of sore throat, fever, pain and weakness of the right arm, was acutely ill, with nuchal rigidity, weakness of the right biceps, pectoralis, and intrinsic hand muscles. Temperature rose to 101.8 F. for five days. The patient was placed on a Bradford frame and a Toronto splint was applied. Spinal fluid, 110 cells per cubic millimeter; 55 per cent monocytes; Pandy test plus 1. Transferred to a private physician on Oct. 9, 1941. No follow-up.

CASE 34.—V. S., an 8 year old white boy, admitted on Sept. 26, 1941 with an eight day history of pains in both legs and lower part of the back, had extreme weakness of all muscles of both lower extremities. The course was afebrile. Hot pads were started on September 27; no passive exercises or reeducation. Spinal fluid, 6 cells per cubic millimeter (monocytes); protein 61 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital Oct. 6, 1941. No follow-up.

CASE 35.—H. P., a 5 year old white boy, admitted on Sept. 12, 1941 with a two day history of fever, abdominal pain and weakness of the left leg, had nuchal rigidity, paralysis of the left quadriceps and left iliopsoas and weakness of all other groups of muscles of the left leg. The course was afebrile. Treatment, Toronto splint applied. Spinal fluid, 125 cells per cubic millimeter; 95 per cent monocytes; protein, Pandy test plus 1. Transferred to Orthopedic Hospital on Sept. 25, 1941. Follow-up in March 1942 revealed considerable atrophy of the left thigh; limitation of motion at the left knee; slight right scoliosis; "tipped pelvis."

CASE 36.—D. F., a 14 year old white youth, admitted with a seven day history of nausea, vomiting, fever, stiff neck and weakness of the left leg, had nuchal rigidity, weakness of all four extremities and a slight diminution of chest excursion. The course was afebrile. Intercoastal weakness was improved. Treatment, Bradford frame; both arms and both legs in Toronto splints. The spinal fluid report is not available. Transferred to private physician on Sept. 23, 1941. No follow-up.

CASE 37.—H. J., a 13 year old white youth, admitted on Aug. 22, 1941 with an eight day history of fever and pain in the legs and a one day history of paralysis of both legs and inability to void, was acutely ill, with nuchal rigidity, complete paralysis of both legs and a distended bladder. Bladder function returned after one week; the course was afebrile. Treatment, retention catheter in place for one week; sulfathiazole to prevent possible bladder infection; discontinued after twenty-four hours because of hematuria; Toronto splint to both legs. Spinal fluid, 103

cells per cubic millimeter; 50 per cent lymphocytes; protein 19.2 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 22, 1941. No follow-up.

CASE 38.—P. E., a 20 month old white girl, admitted on Aug. 13, 1941 with a five day history of sore throat, fever irritability, inability to stand and weakness of the left arm, was acutely ill, with weakness of the left arm and paralysis of both legs. Temperature rose to 100.4 F. daily for four weeks. At time of discharge, there was some return of function of the left forearm and limitation of passive motion at both knees. Treatment, Bradford frame; Toronto splints to both legs and left arm. Spinal fluid, 25 cells per cubic millimeter; 100 per cent monocytes; protein 58 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital Sept. 10, 1941. No follow-up.

CASE 39.—N. K., a 7 year old white girl, admitted on Sept. 10, 1941 with a two day history of inability to move the left leg, had slight nuchal rigidity, paralysis of the entire left leg including the gluteal muscles and weakness of the right leg. Temperature rose to 101 F. for three days. Treatment, Toronto splints to both legs. Spinal fluid, 165 cells per cubic millimeter; 98 per cent monocytes; protein 92 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 29, 1941. No follow-up.

CASE 40.—J. D., a 2 year old white girl admitted on Sept. 6, 1941 with an eight day history of fever, diarrhea, anorexia, listlessness and weakness of the right arm, was irritable and had paralysis of the right biceps, triceps and deltoid. Temperature rose to 101 F. for two days. There was some return of triceps and biceps function. Treatment, Bradford frame; Toronto splint to the right arm. Spinal fluid, 70 cells per cubic millimeter; 75 per cent monocytes; protein 22 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 25, 1941. No follow-up.

CASE 41.—J. K., a 4 year old white boy, admitted on Sept. 4, 1941 with a four day history of pain in the right leg, headache and nausea, had nuchal rigidity, moderate pharyngeal infection and paralysis of the right leg. The course was afebrile. Treatment, Toronto splint to the right leg. Spinal fluid, 126 cells per cubic millimeter; 100 per cent monocytes; protein 30 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 24, 1941. Follow-up in March 1942 revealed paralysis of right quadriceps; shortening of the right hamstrings; contracture of the right achilles tendon.

CASE 42.—P. D., a 3 year old white boy, admitted on Sept. 8, 1941 with a three day history of fever, anorexia, stiff neck, vomiting and weakness of the right leg, had paralysis of the right leg. Temperature rose to 100.8 F. for four days. Treatment, Toronto splint to the right leg. Spinal fluid, traumatic tap. Transferred to Orthopedic Hospital on Sept. 29, 1941. No follow-up.

CASE 43.—M. S., a 28 year old white woman, admitted on Aug. 31, 1941 with a six day history of anorexia, diarrhea, pain in both thighs and finally inability to stand, had nuchal rigidity, paralysis of both lower extremities and weakness of both deltoids. The patient was very obese. Temperature rose to 101 F. for four days. All extremities were placed in the ventral position and a low caloric diet was given. Spinal fluid, 300 cells per cubic millimeter; 100 per cent monocytes; protein 94 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Sept. 22, 1941. Follow-up in March 1942 revealed practically no function in muscles of lower extremities; limitation of motion at knee and ankle joints due to contractures.

KENNY TREATMENT NONPARALYTIC

CASE 44.—I. S., an 11 year old white girl, admitted on Oct. 17, 1941 with a seven day history of fever, nausea, dizziness and stiffness of the neck and back, had been given sulfathiazole prior to admission for four days. She was moderately ill. There was spasm of the dorsum of the neck, back and hamstrings. Temperature rose to 103 F. for one week. Disappearance of spasticity occurred within ten days. Hot packs were applied to the entire back from the head to the heels from October 19 to October 30. Spinal fluid, 245 cells per cubic millimeter; 95 per cent monocytes; protein 40 mg. per hundred cubic centimeters. Discharged on November 1. Follow-up,

December 1941, "occasional cramps" in hamstrings and occasional back pain; no spasm noted on physical examination and no scoliosis.

CASE 45.—M. V., a 22 year old white woman, admitted on Sept. 23, 1941 with an eight day history of sore throat, headache and a one day history of stiffness of the neck, had a mild pharyngeal infection, with spasm of the dorsum of the neck and hamstrings. Spasm was relieved after seven days. Hot packs were applied to the dorsum of the neck and hamstrings from September 29 to October 7. Spinal fluid, 245 cells per cubic millimeter; 100 per cent monocytes; protein 37 mg. per hundred cubic centimeters. Discharged on Oct. 8, 1941. No follow-up.

BULBAR WITH NECK WEAKNESS

CASE 46.—W. K., a 7 year old white boy, admitted on Aug. 8, 1941 with a three day history of vomiting, inability to swallow, nasal regurgitation and pain and stiffness of the neck and back, was acutely ill and had nasal speech, nasal regurgitation, nuchal rigidity, inability to lift the head, and left palatal and left facial weakness. The temperature was up to 102 F. for four days. Feedings were given by the Levine tube for six days. The patient attempted to lift his head with pronounced substituting with the shoulders and platysma. The corners of the mouth were drawn downward. The sternomastoids were "thin bands." After three weeks of Kenny treatment, contractions were felt in the sternomastoids during passive movements. The sternomastoids gradually increased in size. Strength of contractions continued to improve but substitution persisted. Treatment was bulbar: symptomatic; Kenny treatment was started on September 23. Spinal fluid, 95 cells per cubic millimeter; 95 per cent monocytes; protein 73 mg. per hundred cubic centimeters. Follow-up, January 1942, function good; atrophy slight; substitution present.

CASE 47.—F. F., an 11 year old white girl, admitted on Aug. 21, 1941 with a three day history of fever, nausea, vomiting, nasal regurgitation and nasal speech, was critically ill and toxic; there was paralysis of the left palate and both sternomastoids. The patient's condition remained critical during the first week, with pronounced lethargy and fever up to 103 F. There was rather rapid improvement in the second week. Neck flexion was done with substitution, with the shoulders and platysma. Both sternomastoids showed atrophy, the left more than the right. Spasm of the hamstrings was noted on September 23. The Levine tube was used for six days. Hot packs were applied to the dorsum of the neck and hamstrings from September 27. Passive motion and reeducation were started on September 28. Spinal fluid, 160 cells per cubic millimeter; 95 per cent monocytes; protein 100 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 12. Kenny treatment continued. Follow-up, February 1942, function good; moderate atrophy in left sternomastoid; very slight amount of substitution.

CASE 48.—J. B., a 6 year old white boy, admitted on Oct. 7, 1941 with a four day history of headache, fever, nasal regurgitation and difficulty in breathing, was moderately ill; there was occasional nasal regurgitation; on October 11, weakness of the right palate and left sternomastoid. The temperature rose to 101 F. for four days. The patient was able to take fluids by mouth in small amounts. Improvement in sternomastoid function was noted during the first month. Hot packs, passive movements and reeducation were started on October 13. Discharged on November 8 with good function of both sternomastoids; no atrophy. Follow-up, Dec. 17, 1941, strength of sternomastoids unchanged; very slight spasm of the dorsum of the neck and the upper trapezius. The patient was referred to the orthopedic clinic for further care.

CASE 49.—G. T., a 4 year old white boy, admitted on Nov. 20, 1941 with a four day history of fever, sore throat, cough, hoarseness and difficulty in breathing, was acutely ill, with pronounced nuchal rigidity, nasal regurgitation and nasal speech, a large amount of mucus accumulated in the pharynx, occasional cyanosis, and left palatal weakness. Neck weakness on admission could not be evaluated. A bilateral purulent otitis media (hemolytic *Staphylococcus aureus*) developed on December 4. There was bilateral sternomastoid weakness, marked spasm of the dorsum of the neck and moderate hamstring spasm on Decem-

ber 2. During the third week in December, relaxation of the dorsum of the neck and hamstrings had been accomplished. Substitution—"cupping of the shoulders"—was noted. Voluntary contractions in the sternomastoids were noted in the first week in January. Movements were coordinated. Feedings were by the Levine tube for eighteen days. Hot packs were started on November 30. Passive motion and reeducation were started on December 2. Spinal fluid, 50 cells per cubic millimeter; 98 per cent monocytes; protein 56 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on January 19. Follow-up in February 1942 revealed continued improvement in strength of the sternomastoids; no atrophy and no substitution.

CASE 50.—R. O'D., a 22 year old white woman, admitted on Dec. 28, 1941 with a three day history of nausea, vomiting, stiff neck and nasal regurgitation, was acutely ill. The temperature was 104 F. There was a large accumulation of mucus in the pharynx, nasal regurgitation, spasm of the dorsum of the neck and right palatal weakness. Feedings were given by the Levine tube for five days. Pronounced incoordination on attempting neck flexion was noted soon after admission. The patient was always capable of sternomastoid contraction. Spasm of the dorsum of the neck subsided and recurred during the first week. Spontaneous painful contractions of the hamstrings were noted by the patient. Neck coordination improved rapidly, after relaxation of the dorsum of the neck during the third week. Kenny treatment was started on January 1. The patient was transferred to the Orthopedic Hospital on January 29. Follow-up in January 1942 revealed continued improvement; no atrophy; no substitution; nasal speech.

BULBAR AND SPINAL

CASE 51.—R. G., an 8 year old white girl, admitted on Sept. 7, 1941 with a seven day history of sore throat, fever, stiff neck, inability to swallow, incontinence of urine and nasal regurgitation, was dehydrated and critically ill; the temperature was 104 F. Nasal regurgitation, nasal speech and inability to flex the neck were observed. During the first five days the patient continued to appear critically ill. The temperature rose to 104 F. for five days. Feedings by the Levine tube and parenteral administration of fluids were given for five days. On September 15 the patient was able to flex the neck, but this action was performed awkwardly. The patient seemed unable to initiate the movement and would throw her head forward. After two weeks of Kenny treatment, smooth flexion of the neck was noted. Slight weakness of the abdominal muscles and loss of the normal lumbar curve were noted on October 17. Beginning left scoliosis was noted on November 12. Active left lateral trunk flexion was limited on December 9. The Kenny treatment was again instituted on December 10. The spinal fluid report was not available. The patient was transferred to the Orthopedic Hospital on December 12. Follow-up in January 1942 revealed improvement in the abdominal and back muscles; disappearance of scoliosis; neck function good.

CASE 52.—N. G., a 10 year old white girl, admitted on Sept. 21, 1941 with a three day history of fever, stiff neck, drowsiness and difficulty in raising the head, had nuchal rigidity, thick speech, inability to raise the head, hamstring spasm and minimal weakness of the left palate. On September 8 there was paralysis of the right dorsiflexors of the foot. The temperature rose to 103 F. for four days. Nasal regurgitation occurred once on the second hospital day. Hot packs to the entire back were started on October 1 and reeducation two days later. Spasm of the neck, back and hamstrings responded during treatment. Spasm of the right gastrocnemius was persistent so that more frequent packs were used during the last week in the hospital. At the time of discharge, function and power had returned to the sternomastoid. Slight substitution was noted. There was no atrophy. Function and power returned in the right peroneal group and beginning return of function in the right anterior tibial. Spinal fluid, 130 cells per cubic millimeter; 95 per cent monocytes; protein 52 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 12. Follow-up, February 1942, neck flexion normal; continued improvement in dorsiflexion of the right foot with continued relaxation of the right gastrocnemius spasm.

CASE 53.—H. R., a 10 year old white boy, admitted on Sept. 18, 1941 with a two day history of "generalized aches and pains," vomiting, difficulty in swallowing, nasal regurgitation, abdominal pains and fever, had deviation of the tongue to left, right facial paralysis (peripheral type) and inability to cough or swallow. The temperature rose to 101 F. for three days. Parenteral fluids were given. Feedings were given by the Levine tube for twelve days. On September 22 weakness of the sternomastoids was noted and on September 25 paralysis of the entire left deltoid, biceps, triceps and forearm muscles. Kenny treatment was started on September 25. Contractions were felt in the deltoid during passive movements after one month. Function of triceps, biceps and forearm muscles returned during the first three weeks. At discharge there was weakness of the left deltoid and left triceps with spasm of the left upper trapezius noted during passive exercises. Spinal fluid, 105 cells per cubic millimeter; 75 per cent monocytes; protein 51 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on November 26. Follow-up in February 1942 revealed complete range of motion of the left arm with slight weakness of the left deltoid; residual right facial weakness; no atrophy.

CASE 54.—B. F., a 13 year old white girl, admitted on Sept. 26, 1941 with a four day history of fever, headache, pain in the back, nausea, epigastric pain, nasal regurgitation and weakness of the left arm, appeared moderately ill. Examination revealed left palatal weakness, spasm of the dorsum of the neck and back and hamstrings, nasal voice, weakness of the left triceps, biceps and forearm muscles, paralysis of the left deltoid and spasm of the left suprascapular group. The head was held toward the left. No nasal regurgitation was noted. Kenny treatment was started on September 26. Recurrent spasm of the left pectorals, upper trapezius and latissimus dorsi and both hamstrings occurred. There were incoordination and substitution on attempting left arm abduction. Contractions of the deltoid were felt during passive exercises after three weeks. Spasm of the left pectoral muscles responded to treatment after two months. On November 28 spasm of the erector spinae group on the left occurred, giving a beginning right lumbar scoliosis. Treatment for this was started immediately. Spinal fluid, 160 cells per cubic millimeter; 80 per cent monocytes; protein 74 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 12. Follow-up in March 1942 revealed good deltoid function, no limitation of motion; very slight atrophy of left shoulder.

SPINAL

CASE 55.—J. M., a 19 year old white youth, admitted on Sept. 10, 1941 with a six day history of pain in the back of the neck, vomiting, fever, weakness of the left arm and dyspnea, was moderately dyspneic. Examination revealed no cyanosis, cough good, no intercostal function, diaphragmatic action weak and irregular, ballooning of the upper abdomen with each expiration and weakness of both upper extremities. Both arms were placed in Toronto splints from September 10 to 28. The patient exhibited marked discomfort while in splints. On September 28 spasm was noted in both pectorals, left latissimus dorsi, left biceps, back and both hamstrings. There was weakness of the pectoral muscles and left biceps. Kenny treatment was started on September 28. Two weeks later pectoral spasm had been partially released and intercostal function returned. There was paralysis of the left serratus anterior with winged scapula. At the time of discharge there was fair function in the left deltoid. Passive abduction of the left arm was possible without substitution or spasm through 90 degrees; the right deltoid was normal. Winging of the scapula was less prominent, and there was less ballooning of the upper abdomen. Hamstring and back spasm had subsided. Spinal fluid, 85 cells per cubic millimeter; 100 per cent monocytes; protein 52 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 15. Follow-up in January 1942 revealed winging of the left scapula much improved; ballooning of the upper abdomen less prominent; spasm of the left pectorals minimal; left deltoid function good.

CASE 56.—C. S., an 8 year old white girl, was admitted on Sept. 9, 1941 with a five day history of diarrhea, fever, headache, abdominal pain, stiff neck and weakness of the right arm. The

patient was afebrile. There were weakness of both arms and inability to flex the neck. Toronto splints were applied to both arms for three weeks. Kenny treatment was started September 27. The patient was very uncomfortable in Toronto splints. The arms were normal after one and one-half months but initiating of neck flexion was not possible. The patient frequently forgot from day to day how sternomastoid action was performed. At the time of discharge, slight substitution was noted during neck flexion. Spinal fluid, 125 cells per cubic millimeter; 100 per cent monocytes; protein 40 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 13. Follow-up in February 1942 revealed minimal weakness of the sternomastoids as tested against force; no atrophy; minimal substitution.

CASE 57.—C. O., a 9 year old white girl, admitted on Oct. 4, 1941 with a seven day history of fever, vomiting, constipation and pain in the right leg, was unable to extend the right leg on the day before admission. Examination revealed spasm of both hamstrings (right greater than left), spasm of the right gastrocnemius, weakness of the right quadriceps, dorsiflexors of the foot and gluteal muscles and spasm of the right quadratus lumborum and erector spinae group with marked scoliosis. The patient was unable to contract the left quadratus lumborum. The temperature rose to 100.2 F. for two weeks. Kenny treatment was started on admission. Scoliosis was not apparent after two weeks. Function of the right dorsiflexors returned during the first week and beginning return of right quadriceps function in the third week. Hamstring spasm persisted until the second month. At discharge there was complete range of passive motion, right quadriceps poor. Spinal fluid, 5 cells per cubic millimeter; 100 per cent monocytes; protein 55 mg. per hundred cubic centimeters. The patient was transferred to the Orthopedic Hospital on December 13. Follow-up in January 1942 revealed the right quadriceps improving in power; no atrophy, no substitution.

CASE 58.—V. C., a 13 year old white boy, admitted on Sept. 9, 1941 with a two day history of headache, fever and pain in the legs, knees and back, had slight weakness of both quadriceps and the right abductors of the thigh, and spasm of the neck, back and hamstrings. The temperature rose to 102 F. for four days. Both legs were placed in Toronto splints. Analgesics and sedatives were given. Right purulent otitis media was present during the first week. Splints were removed on September 22. Muscle power was good. Spasm persisted so that the patient was unable to sit up in bed. Kenny treatment was started on September 27. Hot baths were given two to three times a day in addition to packs from October 20. Slow relaxation of spasm was noted. At the time of discharge the patient had spasm of the back muscles. Spinal fluid, 180 cells per cubic millimeter; 100 per cent monocytes; protein 99 mg. per hundred cubic centimeters. Discharged on November 1. Follow-up in January 1942: Hot baths were continued at home; occasional "cramps" in the hamstrings; difficulty in climbing stairs; beginning right dorsal scoliosis. The patient was referred to the orthopedic clinic.

CASE 59.—M. K., a 19 year old white youth, admitted on Oct. 24, 1941 with a four day history of fever, stiff neck and weakness of the right leg, had spasm of the neck, back and hamstrings and minimal weakness of the right thigh muscles. Kenny treatment was started on admission. Spasm started to relax after two weeks. No weakness was detected at the end of one month. On discharge slight spasm continued in the back and hamstrings. Spinal fluid, 100 cells per cubic millimeter. The patient was transferred to the Orthopedic Hospital on December 13. Follow-up in February 1942 revealed that the back and shoulders were held somewhat stiffly in walking; slight persistent spasm of the back and hamstrings.

CASE 60.—F. F., an 8 months old white boy, admitted on Oct. 31, 1941 with a nine day history of fever, vomiting, constipation, stiff neck, "limpness" of the right leg and inability to sit up, had spasm of the dorsum of the neck and back and weakness of the right quadriceps and right hamstrings. The patient was afebrile. Kenny treatment was started on admission. Relaxation of spasm occurred during the first three weeks. At the time of discharge, the patient was again able to sit up. There was minimal weakness of the right lateral hamstrings. The right quadriceps was normal. Spinal fluid, 40 cells per cubic milli-

meter; 95 per cent monocytes; protein 67 mg. per hundred cubic centimeters. Discharged on Dec. 19, 1941. To be followed in the orthopedic clinic, no further follow up.

CASE 61.—K. Z., a 3 year old white boy, admitted on Oct. 7, 1941 with an eleven day history of sore throat, fever up to 105 F., pain in the neck, back and knees and weakness of the legs, had had epileptiform convulsions since infancy three to four times a year and speech defect. The child was critically ill and lethargic, with weakness of both legs. Examination one week after admission revealed paralysis of the abdominals and both quadriceps, weakness of other muscle groups of both lower extremities, poor neck flexion and irregularity in intercostal function. Spasm of the back and hamstrings was pronounced. Kenny treatment was started on admission. Spasm of the adductors and hamstrings was very persistent. Constipation was severe. Intercostal function was good after the second week. On discharge there were moderate weakness of the lower extremities and sternomastoids, paralysis of the abdominal muscles and persistent spasm of the dorsum of the neck, back and hamstrings. Spinal fluid, 57 cells per cubic millimeter; 100 per cent lymphocytes; Pandey test negative. The patient was transferred to Orthopedic Hospital on December 15. Follow-up in January 1942 revealed beginning contractions in the abdominal muscles during passive movements; persistent spasm of the back and hamstrings; neck flexion well performed; muscles of both lower extremities showed returning function.

CASE 62.—J. W., a 7 year old white boy, was admitted on Oct. 2, 1941 with a history of headache, fever, stiff neck, vomiting and abdominal pain. These symptoms subsided and on the seventh day the patient was allowed out of bed. At that time weakness of the left foot was noted. There was spasm of the left hamstrings and left gastrocnemius, with shortening of the achilles tendon. Contractions were felt in the dorsiflexors of the foot on active movements. Severe spasm persisted for one month. There was some limitation on motion on passive dorsiflexion. At discharge dorsiflexion was poor. Spinal fluid, 65 cells per cubic millimeter; 98 per cent monocytes; protein 34 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Dec. 15, 1941. Follow-up in January 1942 revealed continued improvement in dorsiflexion of the left foot and continued relaxation of spasm of the left gastrocnemius.

CASE 63.—M. J., a 12 year old white boy, admitted on Sept. 22, 1941 with a five days history of general malaise, anorexia, chills and fever and a two day history of inability to raise the right arm, had had since birth multiple hemangiomas of the right arm and shoulder and had received numerous sclerosing injections. On Aug. 24, 1941 excision of the right pectoral hemangiomas was performed. Coincident with the fourth day of the present illness, the patient had a secondary hemorrhage at the operative site. The right arm was tender and swollen, with many ecchymotic areas. Numerous nodules palpated along the course of the blood vessels. From the operative wound on the right side of the chest exuded serosanguineous material. (The patient had been admitted at the onset of the present illness to the hospital at which the operation had been performed. At that hospital the operative wound was opened and cultures taken which were found to be negative.) There were paralysis of the right deltoid and weakness of the biceps, triceps and forearm muscles. The blood pressure was 150/100 (both arms).

Complete bed rest was carried out with the arm on a pillow and the elbow flexed to an angle of 110 degrees for five weeks. Kenny treatment was started during the fifth week. Continued hemorrhage necessitated absolute immobilization. By the fortieth day, the operative wound had healed. At that time there was noted a biceps contracture, contracture of the forearm flexors and atrophy of the deltoid and shoulder girdle. The contracted biceps muscle was weaker than the triceps. After one month of the Kenny treatment extension of the forearm increased from 110 to about 160 degrees. All groups improved but the deltoid, which remained paralyzed. Hypertension was present at the time of discharge. Blood chemistry was normal and urinalysis was negative. Spinal fluid, 100 cells per cubic millimeter; 100 per cent lymphocytes; protein 80 mg. per hundred cubic centimeters. The patient was transferred to the urologic ward of a general hospital on Dec. 10, 1941 because of a suspicious pathologic condition revealed on an intravenous pyelo-

gram. Follow-up revealed that the blood pressure had returned to normal during the third month after onset of the disease. No kidney disorder was found. The patient was being followed at the orthopedic clinic. Further follow-up was not available.

CASE 64.—L. A., a 2 year old white boy, admitted on Nov. 2, 1941 with a seven day history of fever, chills, stiff neck and paralysis of the left lower extremity, had spasm of the dorsum of the neck and back and flaccidity of the left lower extremity. The Kenny treatment was given from admission. (Varicella developed on November 27 and was associated with cervical adenitis.) Relaxation was noted at the end of the second week. All muscle groups showed a slow return of function. Spasm of the right iliotibial band was noted during the first week and remained "tight" until the end of the first month. At the time of discharge muscle power in the left hamstrings, thigh adductors, abductors and flexors was fair and poor in the quadriceps, gastrocnemius and dorsiflexors of the foot. Spinal fluid, 30 cells per cubic millimeter; 100 per cent monocytes; protein 40 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Jan. 19, 1942. Follow-up in February 1942 revealed slow improvement; there was no spasm, no contracture and no atrophy.

CASE 65.—A. C., a 2 year old white girl, admitted on Oct. 20, 1941 with a four day history of fever, listlessness, vomiting and weakness of the left foot, was afebrile and irritable and had weakness of the left quadriceps, gastrocnemius and gluteal muscles and paralysis of the dorsiflexors of the left foot and toes. Kenny treatment was started on admission. There was a return in all groups after one week. She stood well at one month and at the time of discharge her gait was normal. Spinal fluid, 65 cells per cubic millimeter; 100 per cent monocytes; protein 52 mg. per hundred cubic centimeters. Discharged on Dec. 19, 1941. Further follow-up was not available.

CASE 66.—R. B., an 8 year old white boy admitted on Oct. 17, 1941 with a seven day history of sore throat, fever, pain and stiffness of the neck and back and weakness of both legs, was critically ill, anxious and perspiring freely. Extreme weakness of both lower extremities, irregular chest excursion and slight weakness of both arms were present. Kenny treatment was started on admission. Frequent packs were applied to the pectorals. During the first two days the patient's condition became worse. Respirations dropped to 12 per minute and remained there for more than eighteen hours. During this period there was complete intercostal paralysis. At the end of the first week intercostal action had returned. This was coincident with the beginning of relaxation of the severe pectoral spasm. Spasm was also severe in the hamstrings and adductors of the thigh and back. Right abdominal muscles were completely paralyzed and those on the left were weak. There was constipation. At discharge all groups had some return of function but spasm of the hamstrings and back was still present. The intercostals were normal. Spinal fluid, 40 cells per cubic millimeter; 100 per cent lymphocytes; globulin negative. Transferred to Orthopedic Hospital on Dec. 12, 1941. Follow-up in February 1942 revealed continued improvement in all groups; right abdominals had beginning contractures on passive motion; spasm of back was persistent.

CASE 67.—J. L., a 6 year old white girl admitted on Oct. 22, 1941 with a three day history of pain in the back of the neck, fever, vomiting and weakness of the right arm, was acutely ill, with spasm of the dorsum of the neck, back and hamstrings and complete paralysis of the left arm and shoulder girdle. Temperature rose to 102 F. for two days. During the first week weakness of the right lower extremity and paralysis of the abdominal muscles were noted. There was occasional vomiting during the first three weeks. Constipation was persistent. Spasm was noted in the paralyzed left triceps, pectorals and latissimus dorsi as well as in the hamstrings and thigh adductors. The Kenny treatment was started on admission. After one month beginning return of function was noted in the left hand and forearm muscles. At discharge there was complete range on passive motion of all groups and contractions were felt in the abdominal muscles during passive exercises. Spinal fluid, 175 cells per cubic millimeter; 100 per cent monocytes; protein 47 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Dec. 13, 1941. Follow-up in March 1942 revealed

almost complete return of abdominal muscle power; grip of the left hand was good, the left shoulder was completely paralyzed with beginning contraction in the biceps and triceps on passive exercises; no atrophy; cosmetic result good.

CASE 68.—M. R., a 17 year old white girl, admitted on Oct. 22, 1941 with a four day history of headache, suprapubic pain, backache, fever, stiffness of the neck and paralysis of both lower extremities, had paralysis of the entire right lower extremity and weakness of the left lower extremity, paresthesias of the right lower leg and spasm of neck, back and hamstrings. Kenny treatment was started on admission. The patient was completely comfortable after twenty-four hours except for occasional paresthesias of the right leg. Power in the left lower extremity returned during the first two weeks. Spasm was noted in the paralyzed right thigh adductors. At discharge there was good range on passive motion at the right knee and ankle. There was minimal atrophy of the right calf muscles. Beginning contraction was noted in the thigh muscles on passive motion. Spinal fluid, 140 cells per cubic millimeter; 95 per cent monocytes; protein 52 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Dec. 13, 1941. Follow-up in March 1942 revealed good range on passive motion of the right leg; atrophy more pronounced than on discharge; quadriceps and hamstrings improving in function; beginning contractions in the gastrocnemius and peroneals on passive motion; beginning flexion deformity of the toes.

CASE 69.—M. M., a 13 year old white girl, admitted on Oct. 21, 1941 with a five day history of fever, stiffness of both legs and of the right arm, dizziness and amnesia, was moderately ill, with slight weakness of the right triceps, quadriceps and iliopsoas; severe spasticity of the dorsum of the neck, back, both biceps, hamstrings, adductors of the thigh; paralysis of the abdominal muscles and glutei; poor diaphragmatic excursion. The Kenny treatment was started on admission. General relaxation started after one week. The patient was able to void after eighteen hours, so that catheterization was unnecessary. Spasm of the hamstrings, biceps and adductors of the thigh and back persisted. There was beginning relaxation after one month. Constipation was persistent. There was beginning return of diaphragmatic and abdominal muscle function during the sixth week. At discharge there was complete range on passive motion in all extremities; moderate weakness of the thighs with continued spasm of the thigh adductors; abdomen poor. Spinal fluid, 110 cells per cubic millimeter; 100 per cent monocytes; protein 75 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Dec. 13, 1941. Follow-up revealed continued rapid improvement of the abdominal muscles; slight persistent back spasm; extremities normal.

CASE 70.—J. G., a 2 year old Negro boy, admitted on Nov. 2, 1941 with a nine day history of sore throat, fever, stiff neck and inability to walk, was moderately ill, drowsy, and was lying in opisthotonos. There were paralysis of both lower extremities, faint contractions in the right quadriceps gastrocnemius and dorsiflexors of the foot and severe spasm of the neck, back and hamstrings. The Kenny treatment was given from admission. Beginning relaxation of the back occurred on the third day. The patient was able to sit up during the fourth week. Return of function started in the third week. On discharge no return of function to the left dorsiflexors of foot and left gastrocnemius had occurred. There was full range of motion. Spinal fluid, 50 cells per cubic millimeter; 100 per cent monocytes; Pandy test 1 plus. Transferred to Orthopedic Hospital on Dec. 12, 1941. Follow-up in February 1942 revealed no function in the left dorsiflexors of the foot and no atrophy or contracture; other muscles showed return of function and power.

CASE 71.—H. J., a 5 year old Negro boy, admitted on Nov. 12, 1941 with a five day history of fever, vomiting, pain and weakness of the left leg, was moderately ill, with severe spasm of the left hamstrings. The thigh was held in flexion. There were severe spasms of the back of the neck, back and hamstrings, weakness of all groups of the left lower extremity and mild biceps spasm. The Kenny treatment was started on admission. Relaxation of the back and hamstrings was noted in one week. Severe spontaneous spasm of the right quadriceps was noted on the twenty-first day and remained for one week. At discharge

there was minimal weakness of the left lower extremity muscles. Spinal fluid, 35 cells per cubic millimeter; 100 per cent monocytes; protein 46 mg. per hundred cubic centimeters. Transferred to Orthopedic Hospital on Dec. 15, 1941. Follow-up in March 1942 revealed a peculiarity in gait due to incoordination of the hamstrings.

COMMENT

It is difficult to measure differences in amounts of recoveries in the two groups of patients, but all those who have observed this group of patients and other groups treated in the orthodox manner are convinced that those who received the Kenny treatment are better off in (a) comfort, (b) freedom from atrophy and deformity, (c) rapidity of recovery and (d) possibly in extent of recovery.

CONCLUSIONS

1. At the present time only symptomatic treatment is indicated in poliomyelitis.
2. Patients with bulbar paralysis respond well to the treatment described.
3. All patients, both paralytic and nonparalytic, should be observed carefully and repeatedly for spasm, and treatment to relieve this symptom should be started immediately on the discovery of the spasm.
4. For patients presenting symptoms of spasm, weakness and paralysis in the acute stage of poliomyelitis, the Kenny treatment is the treatment of choice.

GYNECOMASTIA

A STUDY OF FIVE CASES

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The finding of 5 cases of gynecomastia within one division of soldiers and the fact that in each instance the man complained of inability to wear a pack because of this condition prompted us to restudy this problem.

The articles of Lewis and Geschickter¹ and Wernicke² give extensive bibliographies and adequately trace the disease down from its first description by Basedow in 1848 to the present. The cause of gynecomastia is still obscure except in that group of cases in which obviously associated endocrine disturbances are present, such as chorionepithelioma or teratoma of the testicle and tumors of the adrenal cortex. The great majority of cases, however, present no associated endocrine disturbance and in none of our cases could we find any abnormalities that might be causative of gynecomastia. There were no atrophied testicles nor undescended testes. Many authors³ mention trauma as a causative agent; although only 1 of our patients gave a definite history of trauma, all the patients stated that the constant wearing of a pack aggravated their condition and caused additional enlargement of the breast.

The pathologic changes that we encountered were identical with those of chronic cystic mastitis in the

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1. Lewis, Dean, and Geschickter, C. F.: Gynecomastia and Virginal Hypertrophy and Fibroadenomas of the Breast, *Ann. Surg.* 100:779 (Oct.) 1934.

2. Wernicke, H. O.: Gynecomastia, *Surgery* 5:217 (Feb.) 1939.

3. Cole and Elman.⁴ Wernicke.⁵

female, more commonly of the adenosis type. There was epithelial hyperplasia of the ducts with papillary proliferation in some sections and also periductal fibrosis corresponding to the hyperplastic phase of chronic cystic mastitis. In 1 case there were also areas familiar to the involutional stage of chronic cystic mastitis having cyst formation and flattening of the epithelium.

It is to be noted in the accompanying table that all the patients came to the hospital complaining of pain and swelling in the affected breast, being made worse by wearing an army pack, a strap of which puts pressure on the breast area. None of these men had evidence of discharge from the breast, although 1 reported that he had had such an incident five years before. Involvement was unilateral in all cases. In none of our cases was there evidence of endocrine disturbance.

Clinical Data on Five Cases of Gynecomastia

Patient, Age	Duration of Symptoms	History of Trauma	Unilateral or Bilateral	Endocrine Disturbance	Chief Complaint	Endocrine Therapy
A. 22	8 yrs.	None	Left	None	Pain and swelling in breast	None
B. 22	1 mo.	Bumped breast in baseball game	Right	None	Pain and swelling in breast and axilla	None
C. 34	7 yrs.	None	Left	None	Pain in breast; enlarged	Methyl testosterone 1 mg. daily for 1 month
D. 21	7 yrs.	None	Right	None	Enlarged, tender breast	None
E. 19	5 yrs.	None	Right	None	Enlarged, painful breast; discharge 5 yrs. previously	None

The treatment of gynecomastia resolves itself into two divergent schools of thought: those who believe that surgery is the method of choice in most cases⁴ and those who believe that the great majority of cases will respond to the androgens, especially if the condition is bilateral.⁵ Adair⁶ feels that unless the condition responds to testosterone it cannot be called gynecomastia but mastitis, and the best treatment for the latter condition is hot compresses and scientific neglect. One of our patients received injections of testosterone for one month (C. in the table) without any amelioration of his symptoms and he was therefore subjected to surgery and a successful result was obtained.

The surgical procedure that we used in all our cases was a Warren type of incision in the lower lateral side of the breast through which the breast tissue was freed from its attachment to the pectoral fascia and skin and removed by blunt dissection. The nipple was preserved.

4. Cole, W. H., and Elman, Robert: *Textbook of General Surgery*, ed. 3, New York, D. Appleton-Century Company.

5. Desmarest, E., and Capitain (Mme.): The Treatment of Mastopathies with Acetate of Testosterone (treated 17 cases of cystic mastitis and had good results in 16), *Internat. Abstr. Surg.* 65: 310, 1937.

Adair,⁶ Wernicke.⁸

6. Adair, F. E.: A Consideration of Recent Additions to Clinical and Experimental Knowledge of Breast Conditions, *West. J. Surg., Obst. & Gynec.* 48: 645 (Nov.) 1940.

thereby not producing a cosmetic deformity. The only precaution to be noted in doing this operation is that the skin can easily be button-holed in dissection of the breast tissue just underneath the nipple.

None of our cases corresponded to the definitions of true gynecomastia as set forth by Horsley⁷ and Adair⁶ as being similar pathologically to simple hypertrophy in the female and responding to testosterone therapy in all cases. The changes we found in all cases pathologically corresponded to chronic cystic mastitis, and the therapeutic effect to androgen therapy was nil. This may be explainable on the basis that gynecomastia, as thus defined, can be produced only by some endocrine disturbance and that this disturbance can usually be counteracted by the administration of the androgens. None of our patients showed any endocrine abnormality and we therefore should have expected to find changes only of a chronic inflammatory type. However, the fact that 4 of our patients dated the onset of their disease during the period of adolescence, a fact which all writers have noted,⁸ will not permit us to dismiss completely some endocrine factor as contributing to the causation of the disease.

In arriving at a rationale for treatment, we cannot agree with Adair⁶ that a soldier with this disease who is frequently exposed to the ridicule and censure of his associates and to the psychic trauma of his own flights of fancy, not to mention the obvious pain which he has to endure from the wearing of a pack, should be treated with neglect. He is just as much a casualty, as far as the army is concerned, as if he were suffering from a severe gunshot wound. We believe that endocrine therapy has no place in the treatment of the great majority of these cases. A case of bilateral gynecomastia or one in which there may be some glandular disturbance might warrant a therapeutic test with testosterone. The extended treatment necessary when the androgens are used, the frequency of remissions and the possibility that this expensive substitution therapy may have to be continued indefinitely greatly lessen its value, even if one grants that it may be successful in a sufficient number of cases to justify a trial. Surgical treatment, on the other hand, involves a fairly simple and only mildly incapacitating operation, with complete relief of both objective and subjective symptoms and a loss of time from duty of only ten days to two weeks.

CONCLUSION

1. Gynecomastia in army life is not as infrequent a disease as is generally supposed. Five soldiers were found to have sufficient symptoms to warrant hospitalization in one group of approximately 20,000 troops.

2. The etiology in our cases was not on an endocrine basis, nor were there any associated endocrine disturbances present, except that the condition of 4 of our patients developed during adolescence.

3. The pathologic changes were similar to those found in chronic cystic mastitis in the female.

4. Surgical treatment appears to be the most satisfactory method of handling this condition, both from the point of view of the patient and from that of the service.

7. Horsley, J. S.: *Benign and Malignant Lesions of the Male Breast*, *Ann. Surg.* 109: 912 (June) 1939.

8. Lewis and Geschickter.¹ Horsley.⁷ Adair.⁶ Wernicke.⁸

ACUTE INFECTIOUS POLYNEURITIS

A DIAGNOSTIC PROBLEM DURING A POLIO-
MYELITIS EPIDEMIC

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The difficulties attendant to making a diagnosis of acute infectious polyneuritis during an epidemic of poliomyelitis were emphasized in a recent minor epidemic of poliomyelitis. Acute infectious polyneuritis was first described in 1908 by Laurens.¹ The original article of Guillain, Barré and Strohl² in 1916 defined the syndrome as one characterized by a slowly ascending paralysis, a normal cell count with increased protein of the cerebrospinal fluid and a favorable prognosis. The condition has most often been called Guillain-Barré's syndrome. Casamajor³ emphasized the nominal usage because of the inadequacy of the various descriptive names applied to the condition. Yet, because of our reluctance to use proper names, we shall continue to call it acute infectious polyneuritis.

The necessity for differentiating between acute infectious polyneuritis and acute anterior poliomyelitis is more than an academic consideration. The all important question of prognosis is always uppermost in both the physician's and the parent's mind during an attack of either of these diseases. The prognosis of poliomyelitis in the presence of any degree of paralysis is always in doubt for a prolonged period. It is impossible for the physician to prognosticate as to the amount of residual paralysis that will be present when the final stages of the disease have been reached. On the other hand, as suggested by Guillain and Barré in 1916, a favorable prognosis can be made in infectious polyneuritis, predicting the absence of any residual paralysis after a period of months to one or two years.

A great deal of doubt has been cast on this license to present a favorable prognosis by Forster, Brown and Merritt.⁴ They present 26 cases of polyneuritis with facial diplegia and show a mortality of 42 per cent. In this group there were 3 cases that might be included in a pediatric series. The range in ages was from 2 to 15 years. Two of these patients died and 1 evidently recovered completely. The highest spinal fluid cell count among the 3 cases was 11 cells per cubic millimeter, certainly within the normal range. The spinal fluid protein determinations are more controversial. In the 2 fatal cases the spinal fluid proteins were 68 mg. per hundred cubic centimeters and 9 mg. per hundred cubic centimeters; the former is only a slight rise (10 to 47 is normal)⁵ and the latter is low, if anything. On the other hand, the 2 year old child who recovered showed a definitely increased protein to 363 mg. per hundred cubic centimeters.

Forster is justified in including these 2 fatal cases in his group presenting polyneuritis with facial diplegia.

Viets⁶ and Taylor and McDonald⁷ use this terminology and describe similar cases, but if we are to accept Guillain's criterion of a "noteworthy hyperalbuminosis of the cerebrospinal fluid in the absence of cytological reaction" as diagnostic of infectious polyneuritis it is difficult to classify the first 2 cases in this discussion, while the third case, in which recovery evidently occurred, is typical. It is interesting to quote Guillain further in an article published in 1936:⁸ "Our first communication established in cases of polyradiculoneuritis (infectious polyneuritis) of this type, first, the albuminocytological disassociation (increased cerebrospinal fluid protein with normal cell count) in the fluid, and second, the favorable prognosis. I have insisted repeatedly on the two characteristics of this syndrome."

Casamajor presented a series of 22 pediatric cases, 3 his own, 19 from the literature, all fairly typical of infectious polyneuritis and showing the typical albuminocytologic disassociation except in 4 cases. In 2 of these there was no report on the spinal fluid. 1 was reported as negative to the Pandy test for protein and in the last case the spinal fluid was reported entirely negative. In this series all cases except 1 as far as can be determined ended in recovery. The 1 patient who died had a virulent streptococcal infection of the throat. In Casamajor's 3 cases there was complete recovery in all. Casamajor has this to say about the prognosis of infectious polyneuritis: "the prognosis is favorable with recovery over a period of weeks or months, and there are usually no residual signs of paralysis although occasionally muscle atrophy, if present during the disease, persists."

Despite Forster's adverse report, and in view of Casamajor's review of the pediatric literature, we believe that it is reasonably possible to give a good prognosis in these cases. In our own cases, after the first overwhelming acuteness of the illness has subsided somewhat, we have not hesitated to give a good prognosis as to the eventual absence of residual paralysis.

The following 2 cases were seen during a mild epidemic of poliomyelitis. Fifteen cases of poliomyelitis were admitted to our wards over a period of a month and a half.

CASE 1.—C. P., a boy aged 3½ years, a private patient of Dr. De Sanctis, admitted June 17, 1941, awakened the day before admission crying because of his inability to get out of bed. When his mother stood him up he collapsed and complained of severe pain in his lower extremities. The child had not been exposed to acute anterior poliomyelitis. He had waded in water up to his knees the day before onset. A physician was called who noticed weakness of all four extremities, more in the lower extremities than in the upper ones and of greater involvement in the left extremity as compared with the right.

On admission the patient was restless and crying, showed no respiratory difficulties but was sweating profusely. The general physical examination was negative except for neurologic manifestations. The pupils were equal and regular and responded to light. Visual fields appeared grossly negative. All deep and superficial reflexes were absent, except for a one plus response in the left biceps, and there were normal cremasterics. No pathologic reflexes were present. The arms and legs were

6. Viets, H. R.: Acute Polyneuritis with Facial Diplegia, *Arch. Neurol. & Psychiat.* 17:794 (June) 1927.

7. Taylor, E. W., and McDonald, C. A.: The Syndrome of Polyneuritis with Facial Diplegia, *Arch. Neurol. & Psychiat.* 27:79 (Jan) 1932.

8. Guillain, Georges: Radiculoneuritis with Acellular Hyperalbuminosis of the Cerebrospinal Fluid, *Arch. Neurol. & Psychiat.* 36:975 (Nov) 1936.

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1. Laurens, A.: Paris thesis 210, 1908.

2. Guillain, Georges; Barré, J. H., and Strohl, A.: Bull. et mém. Soc. méd. d. hôp. de Paris 40:1462 (Oct. 13) 1916.

3. Casamajor, Louis, and Alpert, G. R.: Guillain Barre Syndrome in Children, *Am. J. Dis. Child.* 61:99 (Jan.) 1941.

4. Forster, F. M.; Brown, M., and Merritt, H. H.: New England J. Med. 225:51 (July 10) 1941.

5. Levinson, Abraham, in Brennemann, Joseph: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1937, vol. 4, chap. 2, p. 16.

absolutely flaccid, the left arm still having some muscle tone. There was some movement of the fingers. Generalized hyperesthesia and muscle pain were present. He was unable to sit up. The red blood cell and white blood cell counts were normal and the sedimentation rate was slightly elevated. The Wassermann reaction of the blood and spinal fluid was negative.

The patient's temperature was never elevated except during an infection of the upper respiratory tract. Two days after admission he showed complete quadriplegia and bilateral weakness of facial muscles. There was no difficulty in swallowing. The pupils were unequal. The hyperesthesia persisted. His voice was nasal and he had difficulty in pronouncing the hard consonants. He remained mentally alert and cooperative. The child's condition continued approximately the same for ten days, at the end of which time some atrophy of the lower extremities was noticed, and there was a definite reaction of degeneration in all the extremities. The patient had also lost sphincter control. One month after admission the facial involvement had disappeared and the patient was able to arch his back, move the left arm slightly and control the right arm. Generalized improvement continued until discharge three months after admission, at which time the patient was able to sit up alone and use his arms to feed himself. He still had weakness of both legs and arms, although he was able to use all four extremities to a limited degree. The voice was definitely improved.

Treatment consisted of administration of vitamin B₁, 100 mg. parenterally every day for eleven days after admission, and of vitamin E, 24 mg. twice a day for two months after admission; splinting of the lower extremities to prevent contraction, and physical therapy starting one month after admission and continuing for one and one-half months. This consisted of tank treatment and under water exercise. The patient took great delight in this form of therapy and showed the most rapid improvement while under this treatment. This unfortunately had to be discontinued because of an intercurrent infection of the upper respiratory tract.

CASE 2.—M. C., a girl aged 9 years, a private patient of Dr. Wenger, admitted Aug. 18, 1941, had been well until two weeks before admission. According to the mother, she caught a cold following an afternoon swim in a pool. Her temperature rose to 102 F. and she complained of "achy pains" in the muscles of the back and legs. Two days before admission the mother noticed that the child was not walking well. When the patient was taken to a private physician he advised admission to the hospital.

The patient was rather heavy set and appeared to handle herself quite well. General physical examination was practically

TABLE 1.—Results of Examination of the Spinal Fluid in Case 1

Date	Cells	Protein, Mg. per 100 Cc.	Sugar, Mg. per 100 Cc.
6/17.....	0	34.9	..
6/20.....	2	81.5	61
6/22.....	3	129.2	..
7/1.....	3	225.0	..
7/7.....	1	177.0	..
7/17.....	0	214.0	..
7/29.....	2	173.9	..
8/18.....	0	53.5	..
9/11.....	0		

negative except for the neurologic manifestations. The pharynx was slightly injected. Circumferential measurements of opposite legs, thighs and arms were the same throughout. Musculature on the opposite extremities were comparable. The child had a definite weakness of flexion and extension of the left arm with difficulty in raising the arm above 90 degrees. The grasp of the left hand was weak. There was also weakness of extension and flexion of the left leg, with the additional weakness of plantar flexion and extension on the left. Judging of the gait was not attempted because of the request of the private physician not to have the patient walk. Superficial and deep reflexes were present and normal on admission. She had some

difficulty in sitting up. The red blood cell and white blood cell counts were normal, and the Wassermann reaction of the blood and spinal fluid was negative.

The temperature was normal on admission and throughout the hospital stay. The involved parts became progressively weaker for approximately a week. Five days after admission she began to complain of pain in the muscles of the right calf and weakness of plantar flexion of the right foot. Reflexes at about this time were equal and active, except for an absence

TABLE 2.—Results of Examination of the Spinal Fluid in Case 2

Date	Cells	Protein, Mg. per 100 Cc.
8/18.....	20	183.6
8/25.....	9	151.0
9/5.....	7	134.0
9/17.....	2	102.0
9/29.....	3	62.0
10/9.....	3	91.5
10/11.....	3	76.0

of the right ankle jerk. From this point on the child continued to improve. Physical therapy in the form of light massage and under water exercise were started about one month after admission and continued daily for two weeks, with some improvement. A month and a half after admission the child was allowed up. Her gait appeared normal, but after two days she complained of pain in the muscles of the left calf. Because of this and the fact that her spinal fluid protein showed a sudden increase at this time, she was put back to bed. On discharge the right ankle jerk could not be elicited and she still showed weakness of the plantar flexion of the right foot and plantar extension of the left foot.

These 2 cases emphasize the difficulties of differentiating between acute infectious polyneuritis and poliomyelitis, especially when the former is atypical, as in the second case. When the case is seen during a poliomyelitis epidemic the diagnostic difficulties are certainly multiplied many fold.

Clinically, the two diseases appear similar but when examined more minutely do differ. The history of the two conditions is usually that of a slow progression of symptoms and signs, although the onset occasionally may be sudden and overwhelming in acute infectious polyneuritis. Patients afflicted with either condition complain of hyperesthesia, but in poliomyelitis this is really muscle pain present, when the muscles are activated and on deep pressure.⁹ With infectious polyneuritis the patient, in addition to having muscle pain, has hyperesthesia on superficial touch.

Both diseases may involve nuchal rigidity and tenderness of the back muscles, although these are rare in cases of infectious polyneuritis. The progress of the paralysis is usually ascending in the two conditions, but they definitely differ in their types of involvement. According to Dechaume,¹⁰ the important pathologic condition in infectious polyneuritis occurs in the peripheral nerves. The consequent paralysis is a direct effect of this underlying disorder. The paralysis is usually symmetrical and bilateral and involves the proximal muscles of the extremities more severely than the distal group. This was the situation in the first case, when the patient had an incomplete quadriplegia, partial control of the fingers still being present on admission. Involvement of the cranial nerves is limited mainly to the seventh nerve.

The major underlying disease in poliomyelitis is in the anterior horn cells. The paralysis due to this

9. Toomey, J. A.: Diagnosis of Poliomyelitis, J. A. M. A. 117: 271 (July 26) 1941.

10. Dechaume, Jean: Rev. neurcl. 1: 493 (March) 1932.

underlying condition is segmental—that is, if a segment in the cord is involved the muscle groups supplied by these nerves will be paralyzed. The paralysis is not necessarily symmetrical and bilateral but is often unilateral and irregular in distribution. In addition, the cranial nerve involvement is multiple rather than limited to the seventh nerve.

There is an important differential as far as the progress of the two conditions is concerned. While exacerbations and new paralyses may develop as late as one to three months after the onset of infectious polyneuritis, it is unusual to have any new involvement after the second week of illness in poliomyelitis.

The all important spinal fluid changes confirm the diagnosis. In cases of infectious polyneuritis there is the already discussed albuminocytologic disassociation. It must be emphasized that the high value of the spinal fluid protein may not occur until two weeks after the onset. In cases of anterior poliomyelitis the spinal fluid picture is entirely different. Here there is a cellular

TABLE 3.—*Differential Diagnosis Between Acute Infectious Polyneuritis and Acute Anterior Poliomyelitis*

	Acute Infectious Polyneuritis	Acute Anterior Poliomyelitis
History	Usually slow progressive involvement but may be overwhelming in its suddenness of onset	Slow progressive onset
Pain	Hyperesthesia and muscle pain	Muscle pain
Involvement	1. Ascending paralysis 2. Bilateral, symmetrical involvement usually beginning in the proximal groups of the muscles of extremities 3. Cranial involvement—usually only 7th nerve	1. Ascending paralysis 2. Segmental, often unilateral, irregular muscle involvement 3. Cranial involvement; multiple cranial nerve involvement
Progress	New paralysis may develop for a prolonged period after onset	No further paralytic involvement two weeks after onset
Laboratory	Albuminocytologic disassociation in spinal fluid	Cellular increase in spinal fluid—early polymorphonuclear in character, followed by lymphocytes
Prognosis	Good	Guarded for a prolonged period

increase which very early is polymorphonuclear; a little later lymphocytes predominate. There may be a moderate increase in the value of the spinal fluid protein. This difference in the spinal fluid confirms the diagnosis.

Prognosis is a variable factor in poliomyelitis. At the onset one cannot foretell the amount of paralytic involvement, and after cessation of the active state and in the presence of paralysis one cannot forecast the amount of residual paralysis. In infectious polyneuritis the prognosis is usually good, and one can prognosticate as to the absence of all residual paralysis.

SUMMARY

It is more than an academic consideration to differentiate acute infectious polyneuritis from acute anterior poliomyelitis, especially during a poliomyelitis epidemic, since in the former the prognosis is good and in the latter it is guarded for a prolonged period.

One of the 2 cases of infectious polyneuritis presented is typical and the other is atypical.

5 East Eighty-Fourth Street.

THE ALLEGED EFFICIENCY OF MEDICINAL TREATMENT OF TYPHOID CARRIERS

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Because typhoid carriers are denied occupations involving food handling and care of children, are kept under surveillance by health departments and fear the possible infection of others, their successful treatment is greatly to be desired. Successful treatment would also be important in the present war emergency so as to prevent and control spread of the infection in military establishments. To this end, two general procedures and agents have been proposed: (1) the removal of foci of typhoid micro-organisms, usually by cholecystectomy, and (2) the administration of drugs which might be bactericidal. Curative results have been claimed for both these procedures.

For instance, Bigelow and Anderson¹ in 1933 and Collier and Forsbeck² in 1937 are among those who have reported cures by removal of the gallbladder. This is, however, a major undertaking, which fails to cure the patient in a considerable number of instances. For this reason, others have sought a medicinal cure. Onodera and his co-workers³ in 1931 suggested the use of soluble iodophthalein, and more recently Saphir and Howell⁴ and Enright⁵ have reported apparent cures from its use. That this drug might be effective in curing persons who harbored the bacteria in their gallbladders appeared rational, owing to its concentration in this organ. In 1941 Levi and Willen⁶ reported the cure of a carrier by the use of sulfaguanidine.

We have tried both the soluble iodophthalein and the sulfonamides, and also a new antiseptic, namely phenothiazine and its derivatives, which are excreted in high concentration into the bile,⁷ in 6 typhoid carriers and 1 dysentery carrier. These compounds and others were also tested in vitro for their effects on typhoid bacilli. Although all the results were negative, it is believed that the publication of this report is in order so that physicians and public health officials may not relax established controls of typhoid carriers by putting faith in, or wasting time and effort with, proposed medicinal cures.

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From the Departments of Pharmacology and of Medicine, Stanford University School of Medicine, and the San Francisco Department of Public Health.

Dr. J. C. Geiger, Director of the San Francisco Department of Public Health, directed patients to us and supplied soluble iodophthalein. Dr. Floyd DeEds of the U. S. Department of Agriculture at Stanford supplied phenothiazine. Dr. L. P. Gebhardt assisted in the study of the drugs on cultures. Dr. S. L. Christian of the U. S. Marine Hospital gave permission to include case 2. The Lederle Laboratories and L. R. Squibb & Sons supplied sulfadiazine and sulfaguanidine respectively.

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2. Collier, F. A., and Forsbeck, F. C.: *Surgical Treatment of Chronic Biliary Typhoid Carriers*, Ann. Surg. 105:791 (May) 1937.

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6. Levi, J. E., and Willen, Almer: *Typhoid Carrier State Treated with Sulfaguanidine*, J. A. M. A. 116:2258 (May 17) 1941.

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EFFECTS ON TYPHOID CULTURES

Phenothiazine, phenothiazone, thionol, tetraiodophthalein, sulfanilamide, sulfathiazole, sulfadiazine and sulfaguanidine were added individually to sterile broth in test tubes to make concentrations of 100 mg. per hundred cubic centimeters (two to six tubes each). The tubes were then inoculated with constant amounts of a suspension of typhoid bacilli in physiologic solution of sodium chloride. Luxurious growth occurred in all the tubes, although this was least in the sulfadiazine tubes. Subcultures from the tubes containing phenothiazine and thionol into fresh tubes containing the same drugs again resulted in plentiful growth.

In an effort to quantitate any possible inhibition of bacillary growth, the drugs (to make 100 mg. per hundred cubic centimeters) were mixed with sterile melted agar and poured into Petri dishes. The surface was then inoculated with a highly diluted saline suspension of typhoid bacilli, but again growth was excellent in all plates, approximating that of the controls.

From this it was clear that none of these compounds, in the high concentrations tried, exhibited a direct inhibitory effect on the typhoid bacillus in vitro. Despite these negative results in vitro, trials were made with patients, because the fate of some of these agents in the body might be different and thereby their inhibitory action enhanced. Furthermore, clinical tests appeared desirable for the sake of completeness of tests and also to check the claims made for iodophthalein and sulfaguanidine.

CLINICAL TRIALS

Trials with certain of the drugs tested on cultures were made on patients, with uniformly disappointing results. In each case the micro-organisms were isolated from the stools and identified by biochemical and serologic procedures in two independent laboratories.⁸ Individual cases are reported as follows:

CASE 1.—A Chinese restaurant keeper aged 50, who was not known to have had typhoid and had no complaints referable to the carrier state, was discovered to be a carrier of the bacilli in a routine examination of food handlers. Before treatment he had one positive, three negative and then one positive stool culture, in that order. He was given phenothiazine 1 Gm. daily for one week, after which his stool still contained typhoid bacilli on two examinations. Then he was given sulfaguanidine 9 Gm. daily for one week, after which stool examinations were negative on five occasions, but on the sixth occasion, or eight months after treatment, the stool was again positive.

CASE 2.—A German seaman aged 55 had typhoid fever at 52. Stool cultures had been consistently positive since then, and a typhoid osteomyelitis of a rib was present. He was given thionol 1.2 Gm. daily for nine days. Cultures of pus from a rib, and the urine and stools were all positive after this. Soluble iodophthalein was given in doses of 4 Gm. on alternate days for six days, then once weekly for one month. Three consecutive cultures made after this treatment still showed the presence of typhoid bacilli. Sulfaguanidine 12 Gm. daily was then given for one week, but two subsequent stool cultures remained positive.

CASE 3.—An American housewife aged 55 did not know how she became a typhoid carrier but was discovered to be one when her brother, for whom she cooked, contracted the disease. Phenothiazine 1.2 Gm. daily was given for one week but failed to render her stool culture negative. Soluble iodophthalein 4 Gm. every other day for three doses, then once weekly for two weeks, was given. The nausea and diarrhea accompanying the medication were partially controlled with camphorated tincture of opium 8 cc. with each dose. Three further stool cultures were all positive. Sulfaguanidine 12 Gm. daily for eight days was given next but failed to remove the infection.

Finally sulfadiazine 6 Gm. daily for five days and, after an interval of one week, 6 Gm. daily for another week and then 3 Gm. daily for a last week, also failed to affect the presence of typhoid bacilli in stool culture.

CASE 4.—An American housewife aged 37 was found to be a typhoid carrier on routine examination, although the stool cultures were irregularly positive. She was given phenothiazine 1.2 Gm. daily for one week without effect on the infection. Following this, soluble iodophthalein 4 Gm. every other day for one week, then once weekly for two weeks, was given. Two weeks later the stool was negative but after another week showed a nearly pure culture of *Eberthella typhosa*. Sulfaguanidine was then given, 12 Gm. daily for eight days, without affecting the stool culture, and finally sulfadiazine 3 to 6 Gm. daily was administered for two weeks. Two subsequent stool examinations were positive for typhoid bacilli.

CASE 5.—A Spanish-American housewife aged 26 had typhoid fever six years before coming under observation as a carrier. Her gallbladder was removed, but her stools continued to be positive for typhoid bacilli. Phenothiazine 1.2 Gm. daily was given for one week. Then, because bacilli were still present, soluble iodophthalein was given, 4 Gm. every other day for one week and then weekly for two weeks. Since this drug also failed to cure her, she was given sulfaguanidine 12 Gm. daily for eight days. Following this, four stool cultures, taken over a period of six weeks, were negative for typhoid bacilli. The next culture, seven weeks after treatment, showed *E. typhosa* in small numbers, but, unfortunately, the biochemical identification was not confirmed serologically. The next four cultures, made eight, nine, ten and eleven weeks after treatment, were negative. Thus, although the single positive culture after the treatment with sulfaguanidine had not been confirmed, it was necessary to consider her not yet cured.

CASE 6.—An elderly American housewife had typhoid fever in May 1941. In August her stools still contained typhoid bacilli, and she was given a course of sulfaguanidine 12 Gm. daily for seven days. Despite this treatment she remained a carrier. Later she was given 12 Gm. of sulfaguanidine and 6 Gm. of sulfadiazine daily for eight days but was not cured.

CASE 7.—A white hospital messenger in his fifties was found to be a carrier of *Shigella paradysenteriae alkaliescens* on routine examination. He received in the following order (1) a course of autogenous bacteriophage, (2) phenothiazine 1.2 Gm. daily for ten days, (3) soluble iodophthalein 4 Gm. every other day for one week and then weekly for three weeks, and (4) sulfaguanidine 24 Gm. daily for four days as well as a longer course with a smaller dose of the drug on another occasion. Stool cultures were positive for the bacilli throughout this extensive, and rather intensive, treatment, though quantitatively somewhat less during sulfaguanidine therapy.

To summarize the medication, 6 typhoid carriers and 1 dysentery carrier were treated. Thionol was given to 1, phenothiazine to 5, soluble iodophthalein to 5, sulfaguanidine to 7 and sulfadiazine to 2.

COMMENT

Although it is disappointing that none of the drugs tried cured the 6 typhoid carriers treated, it is possible that others may do so. The temporary, though imperfect and at best only suggestive, beneficial effect of sulfaguanidine on 2 patients would suggest that this type of compound might be worthy of further chemotherapeutic development. The succinyl sulfathiazole introduced recently by Poth and Knotts⁹ as an intestinal antiseptic was not at our disposal.

It is obvious that long-time "cures" are necessary before a patient can be dismissed. Thus patient 1, who appeared cured six months after treatment, was in fact still a carrier, as demonstrated later. When patient 5 had negative cultures for typhoid, it was thought that sulfaguanidine would be useful for patients who

8. Independent checks were made by the laboratories of the San Francisco Department of Public Health and the clinical bacteriologic laboratory of the Stanford Department of Medicine.

9. Poth, E. J., and Knotts, F. L.: Succinyl Sulfathiazole, a New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract, *Proc. Soc. Exper. Biol. & Med.* 48:129, 1941.

remained carriers after cholecystectomy. Her later relapse did not support this idea.

Several of the patients were more likely to have stools positive for typhoid bacilli when catharsis with magnesium sulfate was used to obtain the specimen. This procedure should be followed if ordinary specimens are not consistently positive. It is interesting that only 3 of the 6 typhoid carriers had had demonstrable typhoid in the past and that only 1 case of typhoid fever was known to have been contracted from these carriers. It should also be noted that 1 patient whose gallbladder was removed was not cured of the typhoid carrier state.

The failure in the dysentery carrier is one of the two failures in the series of Rantz and Kirby.¹⁰ This case is included here also because of its resistance to the other agents as well; and the failure is not to be construed as representing the usual effect of sulfaguanidine in dysentery carriers, which is quite satisfactory.

CONCLUSIONS

1. Six typhoid carriers and 1 dysentery carrier were not cured by treatment with thionol, phenothiazine, soluble iodophthalein, sulfaguanidine or sulfadiazine.

2. The clinical claims of others for iodophthalein and sulfaguanidine were not confirmed.

3. These results agreed with direct negative results with these and some other agents on cultures of typhoid bacilli.

4. As yet there is no dependable or efficient curative drug for typhoid carriers, although further chemotherapeutic development might be attempted with the sulfaguanidine type of compound, but it must be definitely more promising.

5. The established methods for the control of typhoid carriers should not be relaxed by physicians and public health officials in lieu of medicinal treatment.

Clinical Notes, Suggestions and New Instruments

DERMATITIS MEDICAMENTOSA ATTRIBUTED TO CARTER'S LITTLE LIVER PILLS

JOHN A. CONROY, M.D., NEWTON, MASS.

There are many so-called patent medicines advertised and marketed in the United States. The new Federal Food, Drug and Cosmetic Act requires that the ingredients of these products be listed on the package. Carter's Little Liver Pills is a nationally advertised product. It is stated on the package marketed that the pills contain podophyllum resin and Curaçao Aloe. The amount of each drug in each pill or in the entire package is not stated.

O'Donovan¹ stated that podophyllum resin, known as podophyllin, is extracted from the root of *Podophyllum peltatum* L. by percolation with 90 per cent alcohol, precipitation of the resulting tincture in water acidulated with hydrochloric acid, washing and drying. It is a pale yellow to deep orange-brown amorphous powder, soluble in 90 per cent alcohol and in ammonia and partly soluble in ether. The resin yields a percentage of a crystalline substance known as podophyllo-toxin $C_{15}H_{11}O_6$, the remaining amorphous portion being known as podophyllo resin; both substances are purgative.

Podophyllum peltatum L., according to O'Donovan, is a perennial herb commonly found wild in the United States and in some parts of India. It bears a large solitary white flower rising from between two leaves. The yellowish, pulpy fruit is

known variously as May apple, hog apple, raccoon berry, wild lemon and mandrake. Its medicinal use is that of a powerful purgative, and it is sometimes called "vegetable mercury."

The literature reveals no reports of the ingestion of this drug causing dermatitis medicamentosa, but O'Donovan reported several cases and quoted cases reported by Winterburn, Hutchinson and Webster in which dermatitis was caused by contact with podophyllum resin.

Curaçao aloe, as the name suggests, originates in the Netherlands West Indies. Aloe is a genus of plants of the family Liliaceae. There are many species. The American century plant is one of them. There are also a Barbados, a British and another American species. Aloe vera is official in the British pharmacopeia. The drug is the inspissated juice from the leaves of Aloe vera. Aloe chinensis and Aloe pernyi were at one time official in the United States Pharmacopeia but are no longer so. As far as can be ascertained, Curaçao aloe has never been official in either the British or the United States Pharmacopeia.

Aloe contains a crystalline substance, aloin, a resin and a trace of a volatile oil. Aloin is a mixture of anthraene bodies similar to those contained in cascara sagrada, rhubarb and senna. It is less efficient than the crude drug and more irritant. Aloe is a slow acting but efficacious cathartic.

Hamilton² reported a case of acute vesicular dermatitis caused by the ingestion of Curaçao aloe by a woman aged 49. He stated that the patient's eyelids were swollen and the face, arms, legs, groins and the grooves under the breasts were thickly covered by minute vesicles such as are seen in herpes. Over the front of the chest and over the dorsum of the feet these vesicles had become confluent and the surface epithelium lost; acute eczema resulted, and recovery was slow.

In the following case the cutaneous lesions and the progress of the patient are similar to those reported by Hamilton. The case is reported because the product involved is widely distributed and because in possible similar cases the condition may not have been recognized or may have been recognized but not reported.

REPORT OF CASE

H. C. S., a man aged 50, had on Nov. 20, 1941 a large erythematous vesicular lesion on the medial aspect of the right ankle. The lesion resembled an irregular circle and was about 3.5 cm. in its widest diameter.

The patient was first seen on November 28, when he had a generalized erythematous, small vesicular rash which covered the body in large irregular patches. It was particularly noticeable on the lateral aspects of the thighs, the legs and the upper extremities. The entire back, chest and abdomen and the buttocks were covered with small vesicular herpetic lesions.

The chief complaint was intense itching. The temperature and the pulse rate were normal. The heart and lungs were normal. The blood pressure was 140 systolic and 90 diastolic. Urinalysis and the Kahn test gave negative results.

The onset of the generalized dermatitis was sudden, after the initial lesion on the ankle had been present about one week.

The patient's past history was gone over thoroughly with regard to diet and recent medication. The only thing of interest elicited was that about ten days before the appearance of the initial lesion he had taken approximately eight pills of a preparation called Carter's Little Liver Pills. He had never taken this preparation or any other laxative previously. He was not in the habit of taking any "patent medicines." Before the appearance of the rash he had been in excellent health and had had no need to consult a physician for some time. He was not subject to and never previously had had hay fever, asthma, eczema in any form, allergy or cutaneous disease. He had never been on a restricted diet and could not name any type of food which he could say disagreed with him. He was away from home on a business trip at the time he took the pills mentioned. He was not constipated or sluggish when he took them. He said that he had a feeling that he should take something, for no particular reason; so he took about eight of the pills during about three days. He had not used any new type of soap, cream, talc or bath salts.

10. Rantz, L. A., and Kirby, W. M. M.: The Use of Sulfaguanidine in the Treatment of Dysentery Carriers, J. A. M. A. 118:1268 (April 11) 1942.

1. O'Donovan, W. J.: Brit. J. Dermat. 47:13 (Jan.) 1935.

2. Hamilton, Ian: M. J. Australia 1:302 (Feb. 27) 1932.

The rash finally extended all over the body and was composed entirely of minute vesicles. The itching was troublesome. There was edema of the face, of the area about the eyes and of both legs, ankles and feet. The vesicles burst, the skin became moist and crusted and acute eczema resulted.

The disorder progressed slowly, and almost every part of the body was involved. The face, ears, neck, abdomen, chest, back and buttocks slowly cleared, in approximately that order, leaving dry, scaly, slightly pinkish, crescent shaped, macular lesions with a totally clear center. These lesions were more noticeable on the flat surfaces.

The lower dorsal part of the forearms, wrists, hands and fingers after seven weeks presented an acute eczematous condition with much weeping and crusting. The same condition, in addition to considerable edema, was present in both the legs and the ankles. Progress and recovery have been slow.

183 Tremont Street.

Council on Foods and Nutrition

THE COUNCIL ON FOODS AND NUTRITION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT,

FRANKLIN C. BING, Secretary.

FOODEX INELIGIBLE FOR ACCEPTED FOODS

The Scientific Nutrition Corporation of Bloomfield, N. J., has been actively circularizing physicians and others in an attempt to promote the sale of a so-called vitamin and mineral supplement, Foodex. Many physicians have written to the Council office to inquire about the nature of the product and its possible usefulness. One woman wrote from White Plains, N. Y., "Will you kindly advise me as to the value of Foodex as an addition to the daily diet. Is it worth \$3.50 for seventeen days' supply or are there other preparations just as good which are considerably cheaper?"

From the advertising material distributed by the firm it appears that Foodex is available in three dosage forms designated as "Children-Juniors," "Adults" and "Adults-Seniors," the latter being a preparation recommended for use after the age of 45. The "Adults-Senior" product seems to be a little richer in vitamin content than the other dosage forms. Each vitamin cake and each mineral cake together, of this product, are said to provide:

Vitamin A	10,000 Int. Units
Vitamin B ₁	600 Int. Units
Vitamin B ₂ (G)	2,250 micrograms
Vitamin B ₆	200 micrograms
Vitamin C	750 Int. Units
Vitamin D	1,000 Int. Units
Vitamin E	16.66 mgs. Natural Mixed Tocopherols (60% Alpha Tocopherol)
Nicotinamide	10 mgs.
Calcium	1.0 gram
Phosphorus	0.8 gram
Iron	15.0 mgs.
Copper	1.5 mgs.
Manganese	1.0 mg.
Magnesium	1.0 mg.
Iodine	0.15 mg.
Zinc	1.0 mg.

PLUS—The Entire Natural B Complex Factors and Trace Minerals as Found in 1 gram Yeast Concentrate, 1 gm. Wheat Germ Powder, 400 mgs. Rice Polish Powder, and 13 gms. Dry Defatted Milk Powder.

Of the foregoing list it may be pointed out that the significance of vitamin B₆ or vitamin E in human nutrition has not been established. The need for manganese, magnesium or zinc in amounts beyond those that may be provided in any ordinary human diet has not been shown. If the two "cakes" supply, in the amounts claimed, all of the other substances, namely vitamins A, B₁, G, C and D and the minerals calcium, phosphorus, iron and iodine, they are capable of supplying significant quantities of these dietary essentials. But the Council is aware of no evidence that Foodex will retain all of its vitamin potencies under the usual conditions of storage and use; indeed, there is much evidence that vitamins A and C in products such as

Foodex purports to be are especially unstable and are destroyed to a large extent during storage. Further, it is emphasized by all recognized authorities in nutrition that healthy persons can and should receive their dietary essentials by eating an adequate diet, not by consumption of products such as Foodex.

The promotional armamentarium of the firm includes an elaborate brochure entitled "Man a Nutritive Process" and three "Manuals for the Profession" bearing the imposing titles "Geriatrics' The New Science of Keeping Fit after 45," "A New Scientific Individualized Reducing Technique" and "A Dietetic Diagnostic Technique." These booklets consist of a mixture of truths and half truths cleverly blended to make it appear to be extraordinarily difficult to obtain the necessary nutrients from ordinary foods, unless the diet is supplemented with Foodex. Scarcely a single trick long known to "patent medicine" promoters has been overlooked in compounding this advertising material.

CONSIDERATION OF THE BROCHURE "MAN A NUTRITIVE PROCESS"

Examination of the booklet "Man a Nutritive Process" is an interesting adventure for those who like their historical and scientific subjects presented without strict regard to truth. The first three pages of this brochure consist of a brief inaccurate account of the modern knowledge of nutrition. While research workers in numerous laboratories even now strive to determine the biochemical functions of the various vitamins and minerals that are essential in the diet, the anonymous author of this brochure glibly dismisses the interrelationship between vitamins and minerals in the following manner: "One of the principal functions of vitamin D is its influence on calcium and phosphorus absorption. Vitamin A increases the utilization of iron. Manganese is needed to assist the action of vitamin B₁. There also is an interrelationship between manganese and vitamin C. Calcium deficiencies are accompanied by inability to utilize vitamin B₁. Vitamin E appears to be correlated with better utilization of iron, etc., etc." Although there may be a vestige of truth in the statement regarding vitamin D, none of the other quoted statements can be substantiated.

Three pages of this brochure are devoted to a comparison between the methods of preparation and preservation of foods used in "Grandfather's Age" and the "Present Age." These statements are intended to show why grandfather got an abundant supply of dietary essentials by eating honest-to-God food and why people today do not get enough of them, unless they eat Foodex. Much unwarranted emphasis is placed on nutritional deficiency in man as a result of depletion of soil, loss of vitamins as a result of storage of foodstuffs, long distance transportation, pasteurization, commercial canning of fruits and vegetables, quick freezing and cooking of food products. Of course, the firm has not fully taken into consideration that the modern processing methods enable us to obtain safe and wholesome foods throughout the year. An amusing comparison concerns meats. In grandfather's day, so it is said, "The local butcher was an important person. He supplied fresh-killed meat which was consumed immediately." In the present age, so the account reads, ". . . our meats are canned, pickled, smoked, sauged, and corned. They are refrigerated and cold stored, and as they finally reach our dinner table cooked, their vitamin content is greatly diminished." There is practically no loss of the vitamins in meat as a result of refrigeration and, unless grandpa ate his meat raw, he didn't get any more of the heat labile vitamins from meat than do his grandchildren.

There are a number of pages devoted to abstracts of original papers, no doubt without permission of the authors and presented in such a way as to make it appear impossible to obtain an adequate diet without the use of vitamin-mineral supplements. In addition to quotations from published articles of leaders in nutrition, these quotations being removed from their context and thus being capable of producing an effect entirely different from that intended by the authors, there are included abstracts of articles written by newspaper columnists and other rewrite men. Thus U. S. Senator Fletcher is quoted as having said that 99 per cent of the American people are deficient in essential minerals due to depleted soils and vegetation, and David Dietz is reported to have announced that medical men are just

finding out that among the principal causes of night automobile accidents is vitamin A deficiency. The reports by senators and newspaper men might be impressive to the layman who is in no position to judge the scientific qualifications of the persons making the statements, but authorities on nutrition do not believe that there is sufficient evidence at the present time to warrant either of these statements.

The firm is not at all reticent about discussing the "Physiological Effects Arising from Vitamin and Mineral Deficiencies" and "The Functions of Vitamins and Minerals." In the presentations offered, no attempts have been made to differentiate between the signs of deficiency diseases observed in experimental animals and those observed in man. Descriptions of manganese, magnesium and zinc deficiency are written in such a way that one readily gains the impression that these discussions apply to the human being, for whom no deficiency diseases due to lack of these three elements have been reported.

It must be irritating for informed physicians to read assertions such as the following: "There are two methods of obtaining vitamins and minerals. (1) By changing your eating habits to include daily large amounts of protective foods (milk, dairy products, eggs, vegetables, fruits, whole-wheat and dark grains),"—well enough, but look what follows—"all carefully selected and thoroughly checked as to their vitamin content, properly prepared and scientifically cooked under controlled temperatures, as will be indicated below." And "below" the firm has the effrontery to list sixty-four practical suggestions for the preservation of vitamin and mineral values in selecting, preparing and cooking foods. Here is an example of one of the sixty-four statements: "Buy fruits and vegetables from markets that receive them fresh daily. Inquire the source of growth, whether stored, or freshly picked. The destruction of vitamin C starts as soon as vegetables are gathered and gradually continues." After establishing all of these obstacles to its own satisfaction, the firm points out the second way to obtain adequate vitamins and minerals. (This is by the regular consumption of Foodex, of course.)

It is not generally well known how misleading comparative statements regarding foods may be, even when the statements are true. The Council has long held the view that the effect produced by advertising statements is just as important as the actual statements themselves. The Scientific Nutrition Corporation compares the nutritive value of Foodex with a number of natural foods. These foods are listed and illustrated under the caption "Amounts and Kinds of Foods one would have to consume to receive the Vitamins and Minerals contained in a daily supply (one vitamin cake and one mineral cake) of FOODEX (type Adults-Seniors)." It is claimed, for example, that one would have to eat $1\frac{1}{4}$ pounds of butter, 3 pounds of wheat, 4 pounds of cream cheese, $3\frac{1}{2}$ pounds of apples, $12\frac{1}{2}$ pounds of oysters, 1 quart of milk, $\frac{3}{4}$ pound of graham crackers, 1 pound of raisins, six medium bananas, 6 tablespoons of lima beans, 3 cups of cabbage and 30 grs. (grams?) of cod liver oil in order to obtain one's daily supply of vitamin A, B₁, B₂ (G), C, D, calcium, phosphorus, iron, copper, manganese, magnesium and iodine respectively. Even if Foodex contains as much of these dietary essentials as the quantities of foods with which Foodex is being compared, it obviously would not be necessary to eat these quantities in order to obtain an adequate diet, because each of the foods mentioned contributes also a portion of the other essential nutrients. For example, cod liver oil supplies vitamins A and D, yet the firm compares Foodex only with the iodine content of cod liver oil. The only way to make comparisons properly is to point out dissimilarities as well as resemblances.

OTHER PROMOTIONAL LITERATURE

The other advertising material used by the firm contains much of the same sort of material found in "Man a Nutritive Process." In the booklet entitled "'Geriatrics' the New Science of Keeping Fit after 45" the headings of much of the material has been reworded so as to give the impression that the quotations cited refer to old age. As an example, here is the heading "Phosphorus Important to People After 45 Because It Aids the Work of Glands." The following statement appears under this heading: "The American diet is more likely to be faulty in calcium than in any other mineral element. Phosphorus also contributes

to bony structure and forms an integral part of every cell multiplication and is found in organic union with proteins, fats and carbohydrates. It aids in the work of various glands." Contrary to implication, these statements are not direct quotations from Dr. McLester's "Nutrition and Diet in Health and Disease" but they are phrases and clauses taken from the original text and compiled into new sentences. It is thus made to appear that phosphorus deficiencies are as prevalent in the American diet as calcium deficiencies, which of course is false, and no assertion to that effect can be found in the original text nor was intended by its author.

As might be expected, the booklet "A New Scientific Individualized Reducing Technique" calls attention to the ease of obtaining an adequate diet when Foodex is consumed. There is a so-called "Vitadiet Plan," which means the use of Foodex in diets for reducing purposes.

There is a copy of a "Dietetic Questionnaire" in the booklet entitled "A Dietetic Diagnostic Technique." This questionnaire apparently is to be used in determining the adequacy of a patient's diet. It would appear, however, that the procedure is included only to stress the ease with which Foodex solves all the problems. Detailed discussion of this advertising is unnecessary.

CONCLUSION

Foodex, a preparation of the Scientific Nutrition Corporation, Bloomfield, N. J., is a product which is promoted with exaggerated and misleading claims. The composition and advertising are in conflict with the rules and policies of the Council.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

LIVER AND STOMACH PREPARATIONS (See New and Nonofficial Remedies, 1941, p. 335).

PURIFIED SOLUTION OF LIVER-LAKESIDE.—A sterile aqueous solution of liver preserved with 0.5 per cent of phenol. The daily parenteral administration of 0.1 cc. has been found to produce the standard reticulocyte response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Purified solution of liver-Lakeside is used for intramuscular injection in the treatment of pernicious anemia. See the general article Liver and Stomach Preparations, New and Nonofficial Remedies, 1941, page 328.

Dosage.—The amount to be administered will depend on the condition of the patient. When the erythrocyte count is below 1,000,000 per cubic millimeter, injection of 10 U. S. P. units daily or on alternate days is recommended. The physician will be guided by the change in blood picture. Injection of 10 U. S. P. units weekly or every ten days will generally maintain the patient.

THE LAKESIDE LABORATORIES, INC., MILWAUKEE.

Ampule Purified Solution of Liver, 10 U. S. P. Injectable Units per cc.: 1 cc.

Purified Solution of Liver, 10 U. S. P. Injectable Units per cc.: 10 cc. vial.

Purified Solution of Liver, 2 U. S. P. Injectable Units per cc.: 60 cc. vial.

Preparation.—Purified solution of liver-Lakeside, 10 units per cubic centimeter, is prepared as follows: Fresh edible liver is extracted with water at 170 F. for thirty minutes and filtered. The filtrate is concentrated in vacuo and extracted with 70 per cent alcohol; the alcoholic extracts are concentrated in vacuo and precipitated with ammonium sulfate. The precipitate is further purified by alcoholic fractionation, the alcohol removed and the extract made up to volume so that each cubic centimeter contains the extract from 100 Gm. of fresh liver. Five-tenths per cent phenol is used as a preservative. The 2 U. S. P. unit preparation is prepared by diluting the 10 unit product with the appropriate amount of water.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 25, 1942

ENROLMENT FORM AND QUESTION- NAIRE FOR PROCUREMENT AND ASSIGNMENT SERVICE

This week to every physician licensed to practice in the United States there is mailed the long awaited enrolment form and questionnaire of the Procurement and Assignment Service. It comes jointly from the National Roster of Scientific and Specialized Personnel and the Procurement and Assignment Service for Physicians, Dentists and Veterinarians. Each of these agencies is, in turn, related to others and ultimately to the Executive Office of the President. Every physician who receives the medical enrolment form should fill it out as completely as possible and return it immediately in the franked envelop which accompanies it. Opportunity is given to indicate first, second, third and fourth choices of assignment, and it is hoped that the complete functioning of this service will be such that Army, Navy, public health, civilian and industrial needs may be met.

As we go to press the Army requires five thousand physicians, in excess of those already enrolled, to meet existing needs. Therefore, every physician ready now for service who knows that he is not filling an essential position may apply at once to the office of the corps area commander in his area, to the Office of the Air Surgeon, Army Air Force, Washington, D. C., or directly to the Office of the Surgeon General in Washington so that he may receive at once an application blank and proceed to have a physical examination. The Procurement and Assignment Service headquarters in Washington, aided by the consulting office in the American Medical Association and the individual corps areas and state offices, will continue to clear the names of physicians who apply.

This week in Washington a meeting has been called of state representatives of the Procurement and Assignment Service east of the Mississippi River only together with officers of the Army and Navy medical departments, the corps area officers and the board of the

Procurement and Assignment Service to work out plans which will aid recruitment in the individual states. Such plans will, of course, be announced just as soon as they have been suitably drawn and made available. The chairmen for veterinary medicine and dentistry have not been called because there exists no shortage in the supply of these professions for the armed forces. Chairmen of states west of the Mississippi River will meet at a later date at some city west of the Mississippi River.

The physicians of this country have invariably responded to the needs of the armed forces whenever they have been called upon. The Selective Service System makes every man in the United States under 45 years of age available on call. Complete cooperation through use of the enrolment form and through direct application by those ready to volunteer immediately will meet the various demands on medical services without making necessary any call on the Selective Service System for the provision of necessary physicians to the armed forces.

STATUS OF GASTRODUODENAL ULCER

An editorial in the May 4, 1935 issue of THE JOURNAL pointed out some of the inadequacies of the circulatory, the infectious and the mechanical functional theories of the genesis of gastroduodenal ulceration; it concluded that "the accumulated clinical and experimental observations force the clinician and the experimental worker once more to look to the digestive part of the gastric secretion as the most important factor in the genesis of the ulcer." A symposium by physiologists, internists and surgeons in a recent issue of the *Archives of Surgery* reemphasizes the importance of the acid gastric secretion in the causation of gastroduodenal ulcer. Schiffrin and Ivy¹ state that destruction of gastric tissue results from the proteolytic action of the gastric juices. They do not wish to imply that the excessive secretion of gastric juice or its retention in the stomach is the cause of gastroduodenal ulcer. They believe, however, that the irritating action of acid and pepsin is the prime factor in the genesis of postoperative jejunal ulcer and is important in the development and perforation of duodenal ulcer.

According to Quigley,² hunger contractions through mechanical trauma to the area involved may give rise to distress to the patient with ulcer and may prevent healing. It is desirable to avoid the conditions which tend to exaggerate hunger contraction.

1. Schiffrin, M. J., and Ivy, A. C.: Physiology of Gastric Secretion. Particularly as Related to the Ulcer Problem, *Arch. Surg.* 41: 399 (March) 1942.

2. Quigley, J. P.: Motor Physiology of the Stomach, the Pylorus and the Duodenum, with Special Reference to Gastroduodenal Ulcer, *Arch. Surg.* 44: 414 (March) 1942.

According to Dragstedt,³ pure gastric juice has the capacity of destroying all living tissue, including the wall of the stomach itself. Animal experiments utilizing a Pavlov or Heidenhain pouch have demonstrated that pure gastric juice has an aggressive action on living tissue as contrasted with the gastric content, which usually consists of a mixture of swallowed food and saliva, gastric juices from the parietal cells of the fundus, mucus and a neutral or faintly alkaline secretion from the pyloric antrum and varying quantities of regurgitated duodenal juices. This gastric content is relatively inert. In all the experiments in which pure gastric juice from an isolated pouch of the stomach is permitted to flow into the lower intestine, the ulcer forms in the intestine rather than in the gastric mucosa. Since the exposure is similar, one must conclude that the gastric mucosa has the greater resistance to digestion. Under normal conditions the gastric wall is not digested away because it is not exposed to pure gastric juice. A continuous gastric secretion occurs which is not dependent on the presence of food. It is slight and its small volume permits its neutralization by the mucus of the pyloric antrum, swallowed saliva and possibly also regurgitated duodenal contents. It is conceivable, Dragstedt points out, that this neutralizing mechanism may fail or prove inadequate and that, as a result, more or less pure gastric juice may accumulate in a stomach empty of food. It seems probable that some abnormality of this type is responsible for most cases of ulcer in man. Anderson and Fogelson reported a relative decrease in the gastric mucin in some patients with duodenal ulcer. Artificially induced continued excessive secretion of gastric juices by implanting histamine pellets in wax produced ulcers in all the common laboratory animals. Dragstedt advances the opinion that in man a similar excessive secretion of gastric juice occurs and an ulcer begins. The hypersecretion in most cases is probably neurogenic and is abnormal in the sense that it operates when the stomach is empty and in the absence of usual stimuli for gastric secretion.

The problem of ulcer in man, according to Palmer,⁴ is one of tissue resistance versus acid attack. Vanzant and her collaborators have found that there was an increase of about 12 units of free acidity in the case of duodenal ulcer. In the case of gastric ulcer the mean free acidity was lower than normal by about 6 units. The incidence of achlorhydria was half that observed in normal persons. Peptic ulcer occurs in persons with a low secretory rate as well as in those with a high secretory rate. Chronic ulcer does not occur in persons with a complete and continuous

achlorhydria. Nocturnal secretion, however, exceeds in amount and acidity that observed in normal persons. The presence of acid gastric juice is essential for the production of erosions and ulcers. Pepsin greatly facilitates the progress, but it alone will not destroy the mucosa. The chief protection against the acid attack on the cells of the mucosa seems to be provided by the thin layer of mucus with which they are covered. Thrombosis, embolism and infection are not essential features of experimental ulcer. Palmer calls attention to the fact that ulcers may, and the majority do, heal in spite of the presence of acid gastric juice. This is evidenced by the spontaneous remissions and by the healed lesions encountered in routine necropsies.

There appears to be considerable agreement between internists and surgeons as to the treatment of duodenal ulceration. The wave of enthusiasm for stomach resections which began a quarter of a century ago and was advocated with particular fervor in Germany has now considerably subsided. Thus, Allen⁵ states that duodenal ulcer is primarily a medical problem and that apparently 80 per cent of the patients with this lesion respond to conservative measures. This is essentially what Sippy has taught for a number of years: that the surgical indications for duodenal ulcer were complications, namely acute perforation, massive hemorrhage, cicatricial obstruction and intractability. Allen believes, as do practically all surgeons today, that surgical cure for duodenal ulcer can be brought about only by a subtotal gastric resection. The operative mortality from this procedure has been reduced to a level compatible with the results obtained. Wangensteen⁶ emphasizes that the most important criterion of an acceptable operation is that it reduces gastric acidity effectually. He feels that the three-quarter resection meets these demands. The only known manner in which the secretion of acid may be diminished effectually is by sacrificing a liberal portion of the gastric mucosa. Excision of antral mucosa is mandatory to insure achlorhydria. The antral mucosa probably contains a hormonal stimulant of gastric secretion other than histamine.

The case of gastric ulcer differs from that of duodenal ulcer principally because of the ever existing danger of malignant degeneration. Walters⁷ finds that in 10 per cent of the cases gastric ulcer is malignant. He emphasizes that in many cases of chronic gastric ulcer healing is temporary under nonsurgical methods of treatment and recurrence is frequent. The triad which in the past was depended on to insure that the lesion is benign, namely relief of symptoms, disappearance

3. Dragstedt, Lester R.: Pathogenesis of Gastroduodenal Ulcer, *Arch. Surg.* 44: 438 (March) 1942.

4. Palmer, Walter Lincoln: Peptic Ulcer and Gastric Secretion, *Arch. Surg.* 44: 452 (March) 1942.

5. Allen, Arthur W.: Surgical Treatment of Duodenal Ulcer, *Arch. Surg.* 44: 501 (March) 1942.

6. Wangensteen, Owen H., and Lammie, Bernard: Importance of the Acid Factor, *Arch. Surg.* 44: 489 (March) 1942.

7. Walters, Walzman: Gastric Ulcer, Benign or Malignant, *Arch. Surg.* 44: 520 (March) 1942.

of the niche in the roentgenogram and the disappearance of blood from the stools, cannot be absolutely relied on. Schindler and Arndal stress that it is in the differentiation⁸ of benign and malignant ulcer that gastroscopy is most useful and is here superior to roentgenoscopy. They admit, however, that the method had failed to make a correct differential diagnosis in 6 of 113 gastric ulcers. According to Eusterman, gastric carcinoma not only may masquerade successfully as benign ulcer but may react to treatment in similar fashion. Sarah Jordan summarized this problem by stating "Neither the size of the ulcer nor the age of the patient nor the presence of normal acid or hyperchlorhydria should lessen our suspicion of carcinoma, for some of our largest lesions have been benign and some of the smallest malignant. Malignant lesions occur often enough in the young, and benign ulcers often enough in the middle aged and old, and acid is present often enough where the lesion is malignant, so that these three criteria of size of ulcer, age of patient and presence or absence of acid have no actual or practical value in the diagnosis of the individual patient." Proper surgical treatment of gastric ulcer, according to Walters, has been followed by excellent results. In his experience, recurrence has not taken place when one-half the stomach was removed. The operative risk should not exceed 5 per cent and in the hands of skilled surgeons should be less than that.

AFFILIATED UNITS IN THE ARMY MEDICAL DEPARTMENT

Over two years ago the Surgeon General of the Army was granted authority to form certain general, evacuation and surgical hospitals as sponsored units of medical schools or large civilian hospitals. These were called "affiliated units" and were given numbers which, in many instances, corresponded to numbers of similar organizations sponsored during the first world war.

Specific tables of organization were drawn up for these hospitals, and the sponsoring institution was directed to fill the positions from among individuals connected with the institution. Physicians who were recommended were given "affiliated" commissions in the grades set up in the table for the positions they were to occupy. These officers are for duty only with the organization in which they are commissioned. Many have requested active duty prior to the calling out of the unit, and this has been granted, with the understanding that they will be returned to their units as soon as these units are activated.

Some misunderstanding has occurred among reserve officers as to the reason for commissioning these affiliated officers in higher grades than they themselves hold in the reserve corps. Information from the Office of the Surgeon General indicates that the "affiliated" officer

is commissioned to perform a specific duty in his unit, the grade is fixed, and he will remain with the unit. He can be promoted only in the unit if a vacancy occurs in a higher grade and he can qualify for the position.

Current Comment

JOURNAL OF NEUROPATHOLOGY AND EXPERIMENTAL NEUROLOGY

The first number of a new periodical entitled the *Journal of Neuropathology and Experimental Neurology* has just appeared under the editorship of Dr. George B. Hassin, with whom are associated a number of workers in this special field. The first number contains eleven original contributions in the field concerned and also a condensation of the transactions of the annual meeting of the American Association of Neuropathologists, which was held in Atlantic City during June 1941. A survey of the material here included indicates the great advancement that has taken place in this field in recent years. The appearance of a new, well edited, highly scientific publication of this character at this time is an indication of the progressiveness and vitality of American medical science.

NEW OBSERVATIONS IN POLIOMYELITIS

Elsewhere in this issue of THE JOURNAL appear a number of reports covering recent observations in poliomyelitis. The advances that have been made give assurance of greater preparedness on the part of the medical profession in meeting any outbreaks of the disease that may arise in 1942. The paper by Pohl of Minneapolis describes the first 26 cases treated directly under the advice of Miss Kenny. Emphasis on spasm of the muscle as a condition to be promptly controlled is a prominent feature of this discussion. The author is convinced that the method should be immediately adopted as the fundamental treatment of the disease. Already the results in 28 cases treated subsequently promise even more remarkable recovery. From the Willard Parker Hospital in New York comes a statement by Daly, Greenbaum, Reilly, Weiss and Stimson concerning 71 patients. Their conclusions, while most conservative, again emphasize the importance of spasm in muscle. These observers also stress the increased comfort of patients treated with this technic. They offer furthermore a better understanding of the significance of what Miss Kenny calls "mental alienation." The New York observers confirm the results reported from Minnesota to the effect that patients who receive the Kenny treatment are better off in comfort, freedom from atrophy and deformity, rapidity of recovery and possibly in extent of recovery. Step by step the battle against poliomyelitis is being won. The information that has been gained on the nature of the virus and methods of its transfer has been notably extended during the past year. The contributions of physiologists, neurosurgeons and physical therapists help to overcome the ravages of the disease.

8. Schindler, Rudolf, and Arndal, O.: Gastroscopic Differential Diagnosis of Benign and Malignant Ulcer of the Stomach, Arch. Surg. 44: 473 (March) 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

QUININE CONSERVATION ORDER

The fulfilment of requirements for the defense of the United States has created a shortage in the supply of quinine. In an effort to relieve this situation, the Director of Industry Operations of the War Production Board has issued an order (Conservation Order M-131) which provides that after its effective date, April 4, no person may sell, transfer or deliver, or purchase or accept any transfer or delivery of, any quinine except for use as (1) an antimalarial agent or (2) an ingredient of quinine and urea hydrochloride (U. S. P.) for hypodermic use.

Except in the case of a sale, transfer or delivery to an ultimate consumer, no person may sell, transfer or deliver any quinine except on receipt of a certificate manually signed by the person purchasing or accepting transfer or delivery or a duly authorized official, in substantially the following form:

I hereby certify that the quinine ordered hereby is for use as (1) an antimalarial agent or (2) an ingredient of quinine and urea hydrochloride (U. S. P.) for hypodermic use and will not be sold, transferred or delivered by me for any other purpose. This certification is made in accordance with the terms of General Preference Order No. M-131, with which I am familiar.

Name
By

Any stock of quinine, whether in the form of solution, pill, tablet or capsule, but not including preparations containing quinine which has been combined or compounded with other medicinal agents, consisting of less than 50 ounces physically located at any one place on the effective date of the order will not be subject to these provisions and restrictions. Such stock may be disposed of by the owner without restriction. The order does not apply to purchases by importers of quinine to be delivered from outside the continental United States. Any subsequent dealing in quinine after its importation, however, will be governed by the order. The order does not apply to the purchase, sale or use of any preparation containing quinine which, on the date of the order, has been combined or compounded with other medicinal agents.

Every person having in his control or possession on the date of the order (1) any stock of quinine consisting of more than 50 ounces, whether in the form of solution, pill, tablet or capsule but not including preparations containing quinine which has been combined or compounded with other medicinal agents, which stock is physically located at any one place, or (2) over 50 pounds of cinchona bark must make a report on form PD-401. All reports required to be filed and all communications concerning the order should be addressed to the War Production Board, Health Supplies Branch, Washington, D. C., Ref. M-131.

A violation of the order will constitute a criminal offense. In addition, any person who wilfully violates any of its provisions or who by any act or omission falsifies records to be kept or information to be furnished may be prohibited from receiving any further deliveries of any material subject to allocation.

MEDICAL COLLEGE IN CHINA CLOSED BY JAPANESE

Information has been received that the Peiping University College of Medicine, Peking, China, was closed on February 1 by Japanese military authorities. Dr. Henry S. Houghton, who was director of the college, is reported to be held in custody.

THE DISPATCH OF EMERGENCY CASUALTIES AMONG CIVILIANS

According to Dr. E. L. Keyes, chairman, First Aid Posts Committee, St. Louis, the majority of air raid casualties in the London air raids of 1940 and 1941 were sent to only a few hospitals. St. Louis intends to adopt this plan and to send the first of its war casualties to St. Louis City and Homer Phillips hospitals and to defer the use of its other hospitals until after these two city institutions have become filled.

The full implications of such a policy should be considered before it is adopted.

DATA

1. Experienced surgeons are agreed that the "golden period" for the operative treatment of fresh wounds is eight hours. All war wounds first treated by operation after eight hours are, with few exceptions, badly infected. Every fresh wound should be treated within eight hours, and any delay is a most serious matter and may entail the loss of many lives that could otherwise be saved.

2. Stretcher casualties in St. Louis can be moved from a "war incident" to a hospital at an hourly rate up to three stretcher casualties per ambulance per mile, as has been found by test mobilizations.

3. The Office of Civilian Defense states that major operating room casualties received in a hospital can be cleared through the operating room at the rate of three major operative casualties every two hours per operating room with two operating teams.

4. Fractures constitute the bulk of air raid casualties, as may be judged from British figures compiled by Dr. Carl Heifetz. Of 100 air raid casualties, injuries were distributed as follows: Multiple major injuries, 33; lower limbs and hip, 22; upper limb and shoulder, 15; thorax, 12; abdomen, 9; head and neck, 8.

5. An estimate of the number of casualties to be expected may be judged by the following figures: Of every 100 air raid casualties, 30 are killed outright, 42 are stretcher casualties (14 of them sitting) and 28 are walking casualties.

6. Hospitals may well take inventory of their operating room service by estimating how many compound fractures they can treat hourly in the operating room by open reduction and plaster application. A compound fracture is used as a standard merely because it seems to be the most common civilian war injury demanding major surgical attention in the operating room.

CALCULATIONS

7. Hospitals should calculate (from paragraph 6) the number of major open reductions they can clear through their operating rooms in seven hours. Hospitals should assume (from paragraph 2) that it takes the first aid service one hour on the average to transport a casualty from a "war incident" to the hospital. No hospital should be asked to receive more casualties than it can treat operatively within eight hours of injury (see paragraph 1).

TENTATIVE CONCLUSIONS

8. Hospitals will give surprisingly low estimates for the number of major fracture casualties their operating services can clear under paragraph 7. Thus, hospital A may say 15 such casualties, hospital B may say 12 and hospital C may say 6, a total of 33 such casualties in seven hours by three large hospitals.

DISPATCH OF AMBULANCES

9. These data give an accurate way of dispatching ambulances by central control. Assume 33 major compound fractures. Assume an ambulance capacity of 4 stretcher casualties per

vehicle. The 33 casualties require nine ambulances for their transport.

Where should these go? Ambulance 1 may be dispatched to hospital A, ambulance 2 to hospital A, ambulance 3 to hospital A and ambulance 4 (maybe) to hospital A. Ambulances 5, 6 and 7 may be dispatched to hospital B, ambulances 8 and 9 may be dispatched to hospital C.

10. By thus rotating ambulances according to a logical pre-arranged schedule, overtaxing of the services of any given institution or group of institutions may be avoided.

11. Further, and most important, such rotation insures all the wounded, as far as is humanly possible, of receiving surgical treatment within eight hours of injury; i. e., in the "golden period."

12. The British, we are informed by Dr. Charles G. Bradford of Dr. Philip D. Wilson's American Hospital in London, now believe that this system of rotation of ambulances is preferable to the one they first tried.

ARMY WINTER SICK RATE SHOWS DECREASE

The general health of the Army during the past winter was about 50 per cent better than for the same period a year before, the Surgeon General informed the War Department on April 9. Normally higher admission rates during the winter months are expected. The past winter has been an exception, and sick rates were unusually low. Annual hospital admission rates per thousand for the winter period November to February inclusive for the U. S. Army in the United States show a 50 per cent reduction in admissions from all causes, 52 per cent for disease only and 70 per cent for respiratory infections from those of the corresponding period in 1940-1941. The reductions translated into days added for training, savings in drugs and hospital supplies, transportation and incidentals represent a decided addition to the war effort, not to mention the effect on morale and well being, the report said.

The Surgeon General cites the following factors as making for improvement:

1. Health conditions throughout the United States were very good despite the changes due to war, and no extensive epidemics occurred.

2. The Army was composed of seasoned troops who had months of rigorous training in camps and maneuvers. New men were absorbed in old units.

3. The increase in the Army was limited to the facilities available for housing, supply and hospitalization. In other words, preparations for the care of the soldier were complete before he was called to service.

4. Preventive measures were enforced in the Army to assure proper food, pure water, adequate clothing, ventilation, heating and wholesome exercise and amusement.

5. Surgeons were interested in guarding the health of the command through sick call, sanitary inspections and in the hospital.

APPOINTMENTS IN OFFICE OF CIVILIAN DEFENSE

Dr. Thomas B. McKneely, passed assistant surgeon in the U. S. Public Health Service, has been assigned to the Medical Division, Office of Civilian Defense, Washington, D. C., to assist in the organization of emergency medical services throughout the United States. Dr. McKneely is a native of Louisiana and graduated from Tulane University School of Medicine, New Orleans.—Dr. Burt A. Dyar, since 1939 regional medical officer for the Farm Security Administration, with headquarters in Indianapolis, has been appointed regional medical officer for the Fourth Civilian Defense Region with headquarters in Atlanta. Dr. Dyar is a graduate of the University of Minnesota Medical School and during the first world war attained the rank of lieutenant colonel in the Army Medical Corps. For four years he was executive secretary of the South Dakota State Medical Association.—Dr. Wallace D. Hunt, Regional Medical Officer for the Ninth Civilian Defense Region with headquarters in San Francisco, has been made regional medical officer of the Seventh Region with headquarters at Omaha.—Dr. James M. Mackintosh, professor of public health at the

University of Glasgow, has returned to Scotland after spending several months in the United States as a guest of the Rockefeller Foundation, during which time he acted as consultant in medical defense in the Office of Civilian Defense, Washington, D. C., and visited many parts of the United States, lecturing on Emergency Medical Service.

"WAR SESSIONS" AT MINNEAPOLIS AND MADISON

The final two meetings of the series of twenty-five "war sessions" being conducted by the American College of Surgeons will be held on May 1 in Minneapolis and on May 4 in Madison, Wis. The latter meeting was originally announced for April 29 but was postponed because of a conflicting medical meeting. Headquarters for the Minneapolis meeting will be at the Radisson Hotel and for the Madison meeting at the Loraine Hotel. Physicians from Minnesota, North Dakota and South Dakota will participate in the Minneapolis meeting, and those from Wisconsin in the Madison meeting.

Lieut. Col. B. Noland Carter of the Office of the Surgeon General, United States Army, Washington, D. C., will represent the Army, and Capt. Frederick R. Hook, chief of the surgical service, United States Naval Hospital, Washington, D. C., will represent the Navy at both meetings. The Office of Civilian Defense will be represented at the Minneapolis meeting by Dr. Wallace Hunt, Omaha, medical officer, Seventh Civilian Defense Region, and at the Madison meeting by Dr. John S. Coulter of Chicago, medical officer, Sixth Civilian Defense Region. Dr. Harold S. Diehl, member, directing board, Procurement and Assignment Service, will represent that service at the meeting in Minneapolis and Dr. Charles S. Phifer of Chicago, chairman, Sixth Corps Area Committee, will represent the Procurement and Assignment Service at the Madison meeting.

SEATTLE PREPARES

A total of 13,245 volunteers were ready for action with the medical service unit of the Seattle civilian protection division, Dr. M. S. Jared, chief of the unit, announced on March 23. Of these, 11,215 are fully trained and the others are in training. Casualty stations have been organized in schools in each of the air raid zones of Seattle with surgeons, nurses and first aid workers assigned to each zone. Twenty-five ambulances also are assigned to each zone, and first aid workers are being formed into squads to be stationed at drug store first aid posts. A mobile hospital unit is ready for emergencies. Preparations are being made to establish a blood plasma bank under the direction of Dr. Eugene Potter; funds have been appropriated for equipment, including eight freezing units each with a capacity of 500 pints.

NEW JERSEY ORGANIZES EMERGENCY UNITS

Emergency medical units have been organized in five hundred and fifteen of the five hundred and sixty-eight municipalities in New Jersey, according to Dr. C. H. Schlichter, state chief of Emergency Medical Services, the Newark *Evening News* reports. The remaining fifty-three places without units are small communities having no physicians. Seventy-four of the eighty-six general hospitals in New Jersey have organized and equipped units for transporting, treating and providing bed space for victims of air raids and other emergencies. The privately formed first aid and rescue squads for public service have been increased from one hundred and twenty to one hundred and forty and in the last seven months the Red Cross has trained thirteen thousand persons in first aid. It was also announced that the State Laundry Owners Association has made three thousand, eight hundred trucks available for use as ambulances.

DR. ROBERT H. IVY ADDRESSES MEDICAL OFFICERS

The March meeting of the medical department officers residing in Washington and vicinity was addressed on March 16 at the Army Medical Center by Dr. Robert H. Ivy, Philadelphia, on "The Repair of Bony and Contour Deformities of the Face."

PROTECTION OF NEW YORK WATER SUPPLIES

The state of New York has been divided into twenty-three zones for the operation of the state's mutual aid water plan devised for the purpose of preparing each local water authority to meet fully any possible water supply emergency that may arise. Earl Devendorf, state coordinator of water supply, announced recently. A water works official has been appointed as zone coordinator of each one of the twenty-three zones, and district engineers of the state department of health and the sanitary engineers of Nassau, Suffolk and Westchester counties, which constitute separate zones, have been appointed assistant zone coordinators. The program calls for measures aimed at the protection of water supplies, reinforcement of weaknesses of water systems, bringing public water supplies to the highest possible level of operating efficiency, specific planning for emergency operations, and a mutual aid arrangement whereby any community in distress may be supplied promptly with assistance from adjoining or neighboring communities.

APPOINTMENTS TO ILLINOIS COUNCIL OF DEFENSE

Six members of the Illinois Department of Public Health have been appointed as a war measure by Governor Green to serve in various capacities with the State Council of Defense. Dr. Roland R. Cross, director of the department, will act as chief of the Emergency Medical Services in Civilian Defense, with Dr. H. L. Pettitt serving as his assistant. Dr. Pettitt, who is assistant director of the state health department, will serve also as emergency medical service coordinator of the Civil Protection Committee. Mr. C. W. Klassen, chief sanitary engineer of the state health department, has been appointed chairman of the sanitation division of the Defense Council's health committee. Miss Maude Carson, chief public health nurse of the state, will act as chairman of the nurses' advisory committee in the civilian defense effort. Dr. C. F. Deatherage, chief of the health department's dental division, will be a member of the dental advisory committee. Dr. Herman M. Soloway, the state's venereal disease control officer, has been made a member of the medical advisory committee, under the chairmanship of Dr. Charles H. Pfifer, president of the Illinois Medical Society.

MEDICAL AND SURGICAL RELIEF COMMITTEE

In keeping with its policy of giving first consideration to our own country's requirements, the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, has offered to hold all donated supplies for final disposition by the Surgeon General, in the meantime continuing the work of collecting, selecting, reconditioning and redistributing the supplies to recognized relief agencies in America and allied nations.

The committee has recently presented seven emergency medical field sets to New Jersey hospitals and three emergency medical field sets to the Third Naval Base at Bayonne, N. J.

The largest amount ever contributed to the committee in a single month was received during February. Of the total of \$44,701.46, there was earmarked \$27,244.55 for the Free Norwegians, the Free French and the Chinese.

TEMPORARY BRIGADIER GENERALS

Col. James E. Baylis, Medical Corps, U. S. Army, has been promoted to the temporary grade of brigadier general. General Baylis is in command of the medical replacement training center at Camp Joseph T. Robinson, North Little Rock, Ark.—Col. George C. Dunham, Medical Corps, U. S. Army, also has been promoted to the temporary grade of brigadier general and, as previously stated, is to head a mission to Ecuador to undertake malaria control, improvement of sewage disposal and other sanitary measures in cooperation with the Ecuadorean government.—Brig. Gen. Raymond F. Metcalfe, who retired last year, has returned to active duty in the grade of colonel and assigned to surgeon of the Port of Embarkation of San Francisco.

CLASS OF AVIATION MEDICAL EXAMINERS

The following class of aviation medical examiners was graduated on March 28 at the School of Aviation Medicine, Randolph Field, Texas, following a course of study which began January 5:

Capt. John M. Adams	1st Lieut. Arthur E. MacNeill
1st Lieut. Lambert J. Agin	1st Lieut. Stephen L. Magness
1st Lieut. Osmund H. Akre	1st Lieut. John J. Manning
1st Lieut. Martin M. Alexander	1st Lieut. Harry E. Mantz
1st Lieut. Olaf W. Allison	1st Lieut. Samuel H. Marder
Capt. Robert C. Anderson	1st Lieut. George J. Merriman
Major Royal S. Anspach	1st Lieut. Abe Mickal
Capt. Max B. Backer	1st Lieut. John A. Moran
1st Lieut. John D. Barker	Capt. Paul F. Mueller
Capt. Karl L. Bergener	1st Lieut. Harold D. Munal Jr.
Capt. George C. Bess	1st Lieut. Irving Nelson
Major Marshall M. Best	1st Lieut. Robert H. Newell
1st Lieut. John F. Blalock Jr.	1st Lieut. Robert E. Nueruberger
1st Lieut. Richard M. Block	Capt. Leroy H. Oetjen
1st Lieut. Herbert N. Boden	Capt. Ernest B. Oliver
1st Lieut. Charles W. Braselton Jr.	1st Lieut. Albert Owers
1st Lieut. George M. Campbell	Capt. Wilmer H. Paine
1st Lieut. Kenneth D. Campbell	1st Lieut. Alvin L. Perry
1st Lieut. William H. Carter	Capt. Robert R. Pinger
Capt. Frank Clearly	1st Lieut. Ross G. Randall
Capt. Felix H. Crago	Capt. Merrill J. Reel
1st Lieut. William Davis	Capt. Francis Z. Reinus
Capt. James A. Devereux	Capt. Dale A. Rice
1st Lieut. John R. Dixon	Capt. Howard Robinson
1st Lieut. Charles H. Dow	1st Lieut. Leo D. Robinson
Major Grant R. Elliott	Capt. Joseph L. Roy
Major Juan Manuel Fiallos, Honorary Army	Capt. Ralph E. Russell
Major Richard S. Fixott	1st Lieut. Louis Ryterhand
1st Lieut. Sylvester C. Ford	1st Lieut. Edward R. Schumacher
Capt. Herman W. Gaddis	1st Lieut. Jesse W. Shaw
1st Lieut. Edward W. Gans	1st Lieut. Lewis A. Shepperd
1st Lieut. Frederick R. Guilford	1st Lieut. Thurman Shuller
1st Lieut. Dalton C. Hartnett	Capt. Robert C. Simpson
Capt. Arch D. Harvey	1st Lieut. Thomas W. Smith
Capt. Marvin T. Haw Jr.	1st Lieut. William L. Smith
Capt. Robert C. Hecker	Capt. Edward Sosson
Capt. Edward A. Heffner	1st Lieut. Vincent A. Spinelli
Capt. Robert S. Hellmann	1st Lieut. Frederick C. Stansbury
Capt. Joseph R. Henry	1st Lieut. James A. Sutton
1st Lieut. George J. Hinn	Capt. Charles H. Talbot
Capt. George Hopson	Capt. Ralph C. Teall
Major Ernest E. Howerton	1st Lieut. Frank B. Waldorf
Capt. Oscar E. Hubbard	1st Lieut. Warren S. Wallace
Capt. Lawrence B. Hudson	Capt. William W. Washburn
1st Lieut. Nathan W. Hyland	Capt. James E. Watson Jr.
Capt. William M. Jackson	1st Lieut. Roy C. Weinstein
1st Lieut. Ralph E. Jordan	1st Lieut. Raphael J. Weisberg
Capt. Hyman J. Kaplan	Capt. Paul S. Woodall
1st Lieut. Mavis P. Kelsey	1st Lieut. John A. Woodworth
1st Lieut. George M. Knauf	1st Lieut. Leslie W. Young
Capt. Roland D. Lamb	Capt. Herman A. Zampetti
1st Lieut. Milton Layden	1st Lieut. Carl E. Zeitman
1st Lieut. Fred J. Loughran	1st Lieut. Frederick A. Rose

"CABULANCES" AND "SNIFF" SETS FOR WASHINGTON, D. C.

The Army Chemical Warfare Service began the delivery of seventy-five sets of "gas sniffers" on March 28 to the air raid service, Washington, D. C., according to Clement Murphy, the chief air raid warden. These sets, according to the *Times Herald*, are expected to be of help in instructing wardens in the identification of war gases and in gas decontamination.

The District of Columbia's first mass demonstration of the use of taxicabs equipped with stretchers—"cabulances"—took place on March 27. More than a hundred cabs picked up emergency squads of doctors, nurses and nurses' aides at eighteen hospitals, and, after unloading, continued to pick up "bomb victims" and take them to the hospitals. The work of the "cabulances" was supplemented by delivery trucks, also equipped to carry stretchers.

REPLACEMENT TRAINING CENTER MOVED

The Medical Department Replacement Training Center at Camp Lee, Va., will be moved about June 1 to Camp Pickett, Va., thus freeing the entire reservation at Camp Lee for the use of the Quartermaster Corps. According to the *Army and Navy Journal* Brig. Gen. William R. Dear, M. C., will remain in command of the Medical Department Replacement Center when it moves to Camp Pickett, where training facilities will have a greater capacity than at Camp Lee.

MOBILE RED CROSS UNITS

The War Production Board has granted priority ratings to the American Red Cross for the construction of limited numbers of ambulances, mobile canteens and disaster relief units. In the design of these units, consideration was given to the study made by the Red Cross observers of disaster relief in Great Britain during the heavy German bombings and of civilian mass feeding. Construction of these new Red Cross units, Chairman Norman H. Davis said on March 17, is necessary because of the increased threat of enemy bombing over American soil and because the Red Cross cannot apply to the armed forces for extra equipment during wartime as it could in peacetime. The equipment will comprise two types of 1 ton mobile canteens similar to those used in Great Britain, a 1½ ton mobile canteen, a custom built body for canteen service suitable for mounting on different types of chassis, an all service mobile disaster relief unit and five army type ambulances. The custom built canteen can feed civilian disaster victims from four windows, whereas the average canteen has but two windows for service.

Many Red Cross chapters, Mr. Davis announced, have received offers from civic groups and individuals to contribute to the purchase of this equipment. Prices for the mobile units range from about \$1,300 to \$3,000.

NEGRO MEDICAL OFFICERS GRADUATE AT CARLISLE BARRACKS

Twenty-two Negro officers of the medical department were graduated from the Medical Field Service School of the army at Carlisle Barracks, Pa., April 4, after four weeks' training for duty in the medical battalion of a new division. The special course completed was designed to prepare officers for the particular assignments they will have in the medical battalion. The twenty-two officers called to duty from civil life are all first lieutenants in the Army of the United States, eighteen being medical and four dental officers, representing thirteen states and the District of Columbia.

This class brought to a total of fifty-one the number of Negro officers and enlisted men graduated from the Medical Field Service School since a state of emergency was declared by President Roosevelt. The class graduating on April 4 was composed exclusively of Negro officers; ordinarily Negro officers are members of the regular classes.

The roster of the officers in the class which graduated on April 4 is as follows:

MEDICAL CORPS

Orion T. Ayer, Gainesville, Fla.
James A. Brown, Hopewell, Va.
Henry C. Bryant, North Birmingham, Ala.
Albert C. Burwell, Baltimore.
Jesse S. Chandler, Nashville, Tenn.
Lincoln B. Childs, Gainesville, Fla.
Henry I. Davis, Galveston, Texas.
Albert H. Dyson, Dallas, Texas.
Luther J. Lemon, McDonough, Ga.
Charles L. Lomack, Washington, D. C.
Rudolph H. Porter, Austin, Texas.
William B. Price, Fayetteville, N. C.
Harry L. Riggs, Detroit.
Benjamin W. Satterfield, St. Louis.
Lincoln W. Shumate, Washington, D. C.
William B. Smith, Indianapolis.
Roger G. Thurston, Washington, D. C.
Harold H. Whitted, Washington, D. C.
Oney M. Whittier, San Antonio, Texas.

DENTAL CORPS

Paul S. Binford, York, Pa.
Elbert L. Booke, New York.
Emmett I. Brown, Indianapolis.

MEDICAL AREAS FOR MUTUAL ASSISTANCE

Following a meeting of state coordinators in Seattle the north-west counties of Washington will form immediately medical areas for mutual assistance in case of war emergency. According to the Bellingham Herald, coordinator W. J. Kaigler said on his return from the meeting that county representatives met on March 18 at Bellingham to check resources and designate medical areas so that one area may draw from another, if necessary.

MEDICAL DEPARTMENT PROMOTIONS

According to the *Army and Navy Journal*, the following majors of the medical corps were promoted in March to be lieutenant colonels:

Leon L. Gardner
Arthur B. Welsh
Martin E. Griffin
Alvin L. Gorby
Frank B. Wakeman
Paul I. Robinson

Silas B. Hays
Karl R. Lundbert
William S. Stone
Thomas Neilson Page
Joseph H. McNinch

The following captains of the medical corps were promoted to the grade of major:

Bryan C. T. Fenton
Charles H. Moseley
James T. McGibony
John K. Davis
Louis F. Hubener
Lee P. Mayes
Daniel J. Sheehan

Earl C. Lowry
John J. Pelosi
Theodore C. Bedwell Jr.
Richard Reynolds
Robert J. Goldson
Aaron L. Kaminsky

INSTRUCTION IN TROPICAL MEDICINE FOR ARMY OFFICERS

Between Aug. 1, 1941 and Jan. 1, 1942 one hundred and eight officers of the Medical Corps of the Army graduated from the course in tropical medicine at the Army Medical School, Washington, D. C. Twenty-four additional officers graduated late in February following the two months course. Among those who lectured to this class were Rear Admiral E. R. Stitt, U. S. Navy, retired, Drs. Charles Armstrong, R. E. Dyer, Edward Francis, L. L. Williams Jr. and W. G. Workman of the U. S. Public Health Service and Dr. F. C. Bishopp of the U. S. Department of Agriculture. A new class with about the same number of officers in attendance took up the course on March 2.

LOS ANGELES PREPARES FOR CIVILIAN CASUALTIES

At a joint meeting of the hospital committee of the Los Angeles city and county defense councils on March 27 a plan was announced that provides four thousand five hundred emergency hospital beds in case of need of medical service. At that time a sufficient quantity of blood plasma was needed, but it would be provided within a few weeks, the county health officer is reported to have said. There will be nearly two hundred casualty stations in Los Angeles County, each stocked with medical supplies.

STATE HOSPITAL AVAILABLE FOR CHRONIC CASES

Mayor F. H. LaGuardia, according to the New York Herald Tribune, has received assurance from Governor Herbert H. Lehman that the facilities of the Willow Brook State Hospital on Staten Island will be available for chronic cases transferred from city hospitals to make room for casualties in the event of enemy action against New York City. When the hospital is completed, it will accommodate between three and four thousand persons.

CHIEF OF VETERINARY CORPS PROMOTED TO BRIGADIER GENERAL

The Senate confirmed on March 7 President Roosevelt's nomination of Col. R. A. Kelsner, chief of the U. S. Army Veterinary Corps, for the rank of brigadier general. Dr. Kelsner entered the Army as a second lieutenant in the veterinary section of the officers' reserve corps in June 1917 and has advanced through the various grades since that time.

MILWAUKEE PREPARES FOR EMERGENCIES

The Milwaukee Journal states that 1,056 physicians, nurses, first aid workers and others were being recruited in March to man one hundred and eight first aid posts, casualty stations and base hospitals for war emergencies in Milwaukee County, according to Dr. H. W. Sargeant, chief of the emergency medical service. In addition, four mobile first aid stations had been completed, ambulances had been assigned and control telephone lines installed.

ORGANIZATION SECTION

REPORTS OF OFFICERS

NOTE.—At the 1925 session of the Association, the House of Delegates suggested that all reports of officers, committees, etc., and resolutions to be brought before the House, if available, be published in advance of the session so as to permit careful consideration and discussion.—Ed.

REPORT OF THE SECRETARY

To the Members of the House of Delegates of the American Medical Association:

The following annual report of the Secretary is respectfully submitted:

MEMBERSHIP

The official membership list of the American Medical Association as of April 1, 1942 included the names of 120,701 physicians as compared with 118,441 enrolled members on the corresponding date in 1941. The deaths of 1,824 members were recorded in 1941.

The usual tabulation pertaining to the organization of constituent state and territorial medical associations, the total number of counties, the number of component county medical societies, the number of unorganized counties and the number of physicians as shown by the latest available information is included as a part of this report. The accompanying table also reflects the number of members on April 1, 1941 and on April 1, 1942 as reported by each constituent state and territorial medical association and the number of Fellows in each state and territory. It is possible that there may be a slight difference in the number of members as shown by the official records of an individual constituent association and the number presented in the accompanying table, largely for the reason that official reports may have been unavailable at the time the table was prepared.

FELLOWSHIP

The official Fellowship roster carried 73,747 names on April 1, 1942 as compared with 72,504 on the same date in 1941.

During the year the deaths of 836 Fellows were reported to the Secretary's office.

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The regular Annual Conference of Secretaries of Constituent State Medical Associations was held in the Assembly Room of the Association's building in Chicago on Nov. 14 and 15, 1941 and was attended by nearly all the state secretaries and editors of state medical journals, as well as by a goodly number of officers and members of official bodies of constituent associations and component societies. One entire section of the program of the conference and a part of another section were devoted to discussions of various phases of the national defense program and of the relations of physicians with the military forces.

THE AMERICAN MEDICAL ASSOCIATION AND THE WAR

As will be shown in several official reports to be submitted to the House of Delegates, the American Medical Association has attempted to discharge fully its duty to the nation and to medicine during the emergency created by the world war. Every elected officer of the Association, many members of its official bodies and a large part of its administrative personnel have been almost continuously engaged in activities, designed to be helpful to official governmental agencies, pertaining directly to the national defense program. A large part of the time of the Secretary and his office staff has been devoted to such duties.

Organization of Constituent State and Territorial Medical Associations, April 1, 1942

	Number of Counties in State	Number of Component Societies in State	Organization of Constituent Associations						Number of Fellows in State
			No. of Counties Not Organized		No. of Physicians in State, 16th Ed. A. M. A. Directory	Number of Members of State Associations			
						1941	1942		
			1941	1942					
Alabama	67	67	..	..	2,075	1,576	1,564	632
Arizona	14	13	1	1	594	374	383	277	
Arkansas	75	58	11	11	1,829	1,060	1,085	447	
California	58	40	8	8	11,909	6,743	6,987	4,548	
Colorado	63	27	1	1	1,964	1,162	1,179	744	
Connecticut	8	8	..	..	2,598	1,753	1,813	1,140
Delaware	3	3	..	..	330	230	248	149
Dist. Columbia	..	..	..	..	2,243	917	898	680
Florida	67	33	16	17	2,276	1,391	1,397	771	
Georgia	139	95	37	37	2,825	1,957	1,651	654	
Idaho	44	10	..	..	493	316	321	171
Illinois	102	92	6	6	12,188	7,991	8,232	4,909	
Indiana	92	83	1	1	4,132	3,249	3,202	1,962	
Iowa	99	97	..	..	3,084	2,464	2,462	1,381
Kansas	105	71	18	17	2,070	1,504	1,680	964	
Kentucky	120	114	3	3	2,761	1,938	1,887	828	
Louisiana	64	42	15	15	2,464	1,551	1,547	785	
Maine	16	15	..	..	992	732	750	388
Maryland	23	23	..	..	2,988	1,628	1,596	992
Massachusetts	14	18	..	..	7,889	5,367	5,416	3,182
Michigan	83	54	..	..	9,362	4,246	4,371	2,672
Minnesota	87	34	1	1	3,527	2,794	2,934	1,659	
Mississippi	82	21	3	3	1,497	953	986	337	
Missouri	114	78	8	8	5,297	3,894	3,279	2,035	
Montana	56	17	21	21	537	415	442	256	
Nebraska	93	50	16	16	1,635	1,150	1,150	610	
Nevada	17	5	12	12	167	120	125	65	
New Hampshire	10	10	..	..	656	511	639	296
New Jersey	21	21	..	..	5,813	3,928	4,211	2,709
New Mexico	31	14	16	17	439	278	281	155	
New York	62	61	1	1	27,396	17,805	18,235	11,414	
North Carolina	100	67	24	24	2,740	1,850	1,854	897	
North Dakota	53	13	11	11	518	396	401	262	
Ohio	88	87	1	1	9,318	6,529	6,668	4,412	
Oklahoma	77	64	7	7	2,352	1,567	1,440	762	
Oregon	36	25	2	2	1,491	866	906	531	
Pennsylvania	67	60	6	6	13,529	9,531	9,769	6,231	
Rhode Island	5	6	1	1	991	515	583	347	
South Carolina	46	37	4	4	1,402	948	897	128	
South Dakota	69	12	1	1	598	311	323	187	
Tennessee	95	57	24	24	2,908	1,752	1,748	847	
Texas	254	128	5	..	6,898	4,526	4,159	2,355	
Utah	29	9	4	4	575	476	487	264	
Vermont	14	10	3	3	521	351	293	202	
Virginia	100	50	8	8	2,889	1,793	1,828	1,121	
Washington	39	24	12	13	2,200	1,517	1,691	947	
West Virginia	55	30	5	6	1,821	1,274	1,291	705	
Wisconsin	71	52	..	..	3,521	2,569	2,599	1,517
Wyoming	24	11	11	11	274	170	192	116	
Alaska	..	..	..	..	74	11	40	23
Hawaii	5	4	1	1	475	291	320	129	
Isthmian Canal Zone	..	..	..	..	216	124	123	25
Philippine Is (Provinces)	56	26	30	30	2,445	1,251	1,270	43	
Puerto Rico	7	7	..	..	473	295	402	76
Foreign	..	..	..	..	50	..	..	161
	3,129	2,023	355	352	180,075	118,441	120,701	70,296	
Commissioned medical officers	..	..	..	..	..	..	..	3,541
								73,747	

SUBMISSION OF MEMORIALS AND RESOLUTIONS

Several communications have been received during the past year from members of the House of Delegates and from others suggesting and in some instances demanding that memorials

and resolutions to be submitted to the House at an annual session should be sent to the Secretary in time for them to be printed in the Handbook of the House of Delegates. This matter is respectfully submitted to the House of Delegates for such consideration as the House may believe to be indicated.

PROPOSED AMENDMENT TO THE CONSTITUTION

The following resolution containing a proposed amendment to the Constitution was presented to the House of Delegates at the Cleveland session in 1941, and, in accordance with the provisions of the Constitution, the amendment proposed in the resolution will be before the House of Delegates for action at the Atlantic City Session:

WHEREAS, The Board of Trustees of the American Medical Association was set up at a time when numerically the Association was approximately one-third its present strength; and

WHEREAS, Because of the great variety of conditions existing throughout the country, largely because of geographic and population problems, it seems desirable to provide a greater spread of membership for the Board, even though it is not at all a matter of representation in the sense that the House of Delegates is a representative body; therefore be it

Resolved, That article 6, section 1 of the Constitution of the American Medical Association be amended by substituting the word "eleven" for the word "nine" as the last word of the fourth line of that section, so that article 6, section 1, will then read: "SECTION 1.—The general officers of the Association shall be a President, a President-Elect, a Vice President, a Secretary, a Treasurer, a Speaker and a Vice Speaker of the House of Delegates, and eleven Trustees"; and be it further

Resolved, That article 6, section 3 of the Constitution of the American Medical Association be amended to read as follows:

"SEC. 3.—Two Trustees shall be elected annually except every fifth year, when three shall be elected, each to serve for five years, or until his successor is elected and installed: *Provided*, that at the session of the House of Delegates at which this amendment is adopted three Trustees shall be elected to serve five years and one to serve four years. No Trustee shall serve for more than two consecutive terms, but a Trustee elected to serve an unexpired term shall not be regarded as having served a term unless he has served three or more years."

SUSPENSION OF PAYMENT OF DUES BY PHYSICIANS IN MILITARY SERVICE

A large number of communications have been received from physicians who have been called to active duty with the military forces of the nation pertaining to the suspension of payment of Fellowship dues.

It appears that a number of constituent state medical associations and a much larger number of component county medical societies, by the adoption of resolutions or under authorization provided in their by-laws, have suspended the payment of membership dues in whole or in part by members who have been assigned to active duty. As there is no provision whatever in the Constitution and By-Laws of the American Medical Association for the suspension or remittance of Fellowship dues, the Secretary has been compelled, in replying to communications of the nature aforementioned, to state that no such authorization exists.

There seems to be some confusion in the minds of many members with respect to dues paid to the American Medical Association. No member of the American Medical Association as such is required to pay dues to the American Medical Association, nor does any part of membership dues paid to component county medical societies or constituent state or territorial medical associations accrue to the American Medical Association. Only those members who have qualified as Fellows of the American Medical Association are required to pay dues to the Association.

IN APPRECIATION

This session of the House of Delegates marks the twentieth year in which the present incumbent has served as Secretary of the American Medical Association. As in each previous year, an expression of grateful appreciation is offered to the members of this House, to all the officers of the Association and members of its administrative personnel and to the officers and members of state and territorial medical associations and county medical societies for the kindly consideration, assistance and encouragement extended to the office of the Secretary.

Respectfully submitted.

OLIN WEST, Secretary.

REPORT OF THE BOARD OF TRUSTEES

To the Members of the House of Delegates of the American Medical Association:

The Board of Trustees respectfully submits to the House of Delegates the following report pertaining to the general affairs of the Association and to the activities of its various councils, bureaus and departments during the past year. Reports of those councils that are standing committees of the House of Delegates will be separately submitted.

The usual quarterly meetings of the Board of Trustees and the usual monthly meetings of the Executive Committee of the Board were held. At various times during the year representatives of other organizations have conferred with the Board of Trustees or with its Executive Committee. At these conferences matters of important interest to the organizations represented and to the whole cause of American medicine have been considered. Recently an important conference participated in by the Executive Council of the Association of American Medical Colleges and the members of the Council on Medical Education and Hospitals and of the Board of Trustees of the American Medical Association was held in Chicago. As a result of this conference, committees were appointed to represent the Executive Council of the Association of American Medical Colleges and the Council on Medical Education and Hospitals for the purpose of outlining plans for establishing more complete cooperative relations between these two important groups.

It is not possible to include in the annual report of the Board of Trustees reference to all the many and varied problems that come before this body for consideration. Many matters not referred to in this report have received the official attention of the Board and final disposition has been made. Many other matters that have been presented to the Board have not required official action or are still under consideration.

The general officers of the Association, including the President, the President-Elect, the Vice President and the Speaker of the House of Delegates, have attended most of the meetings of the Board of Trustees and have actively participated in the consideration and discussion of matters requiring attention. The Board of Trustees greatly appreciates the active interest and the helpful counsel of these officers.

Income and Expenditures

On the recommendation of the auditors of the Association, some changes have been made in accounting methods so that in the future the valuation of property and equipment will be made on the basis of costs. The reserves that were heretofore created will be continued and a depreciation reserve will be reflected in the annual reports submitted by the auditors. The Report of the Auditor and the Report of the Treasurer for the year ended Dec. 31, 1941 are submitted as a part of this report of the Board of Trustees.

Gross income from all sources for the year ended Dec. 31, 1941 amounted to \$1,939,127.39, representing an increase of \$62,773.59 above the gross income for the previous year. Total expenditures amounted to \$1,715,779.75, an increase of \$27,194.25 over the total expenditures for the previous year.

Fellowship dues and subscriptions were received in the amount of \$795,460.48, which is the largest income that has ever been produced from these sources and which exceeds income similarly derived for the year 1940 by the sum of \$19,258.04. Since it is certain that thousands of physicians will be called into service as medical officers of the Army and Navy and of other federal agencies, it is possible that income to be derived from Fellowship dues and subscriptions to the Association's publications may be materially reduced for the current year and for each year during the continuation of the great world war.

Income received from advertising in the Association's publications for which advertising is accepted amounted to \$1,009,853.96, which exceeds the highest income produced from this source heretofore by the sum of \$3,735.82 and is greater by the sum of \$40,272.71 than income received from advertising in the preceding year.

Interest received on investments in 1941 amounted to \$77,424.09 as compared with \$80,571.91 received from the same source in 1940. The shrinkage in income received from this source has continued over a period of several years because of a general

reduction in interest rates and inability to replace securities that have matured or have been called with other securities of equal yield, and also because of the difficulties involved in making satisfactory investments. It is the policy of the Board of Trustees to invest the funds of the Association available for investment with a view to security rather than with a view to securing greater interest returns. The face value of securities held in the Association's portfolio that are in default or partially in default of interest payments amounts to \$43,400. The accumulated unpaid interest on defaulted and partially defaulted bonds as of Dec. 31, 1941 amounted to \$4,620.

The net income for the year 1941 as shown by the Report of the Auditor was \$223,347.64, of which amount \$77,424.09 was interest on investments.

The amount expended for paper used in the publication of THE JOURNAL in 1941 was \$260,190.99 as compared with an expenditure of \$230,775.35 in the preceding year. The cost of paper advanced steadily through the year covered by this report, but the full import is not reflected in the figures here presented for the year 1941 for the reason that not all of these increases were effective during the entire year. It is possible and perhaps very probable that additionally increased prices may become effective during the current year. An earnest effort is being made to avoid wastage and otherwise to conserve paper supplies.

Total expenditures for wages and salaries applicable to THE JOURNAL account for the year ended Dec. 31, 1941 amounted to \$540,800.30, as compared with expenditures of \$504,564.69 for the preceding year. This increase does not reflect to the fullest extent the higher wage rates which became effective on various dates during the year for different groups of workers, and it is possible that further adjustments will have to be made during the present year. Because of higher costs of living and because of a tremendously increased demand for office personnel, it became necessary to make numerous salary adjustments and to employ additional personnel in some departments, especially in those concerned with the preparation and publication of a new edition of the American Medical Directory and with the work incident to the maintenance of cooperation with the government in the national defense program. For the first time in many years, great difficulty has been experienced in maintaining the necessary working personnel because of the tremendous demands of federal agencies and industries of the nation. These difficulties seem to be increasing rather than diminishing. The cost of practically all materials used by the Association has grown larger, and in some instances increases in costs have been considerable in amount.

Expenses involved in the maintenance of various councils, bureaus and committees of the Association amounted to \$460,513.58 as compared with expenditures of \$482,510.35 in the preceding year. The reduction in such expenditures is in part due to losses in personnel that, in some instances, it has not yet been possible to replace satisfactorily and the consequent suspension of payment of salaries or wages. When existing vacancies can be satisfactorily filled, the decrease in expenditures for the maintenance of these official agencies of the Association will not recur.

Legal and investigation expenses in 1941 amounted to \$119,183.19, as compared with \$112,345.16 in 1940.

A building formerly used for storage purposes, which did not provide adequate space and was not so constructed as to permit the storage of heavy supplies, and an old residence building that has been utilized for some years were razed during the year, and a new storage building has been erected adjoining the main building of the Association. This new building is three stories in height and is so constructed that, if it becomes necessary, additional stories can be added. The cost of this building, which is not yet altogether completed, will be approximately \$215,000.

The buildings and other properties of the Association have been well maintained, and all possible effort has been exerted to effect and maintain economies to a degree that will not interfere with efficient operations.

The number of employees at the time of preparation of this report was six hundred and forty-four, and the Board of Trustees desires to acknowledge with gratitude the faithfulness, efficiency and loyalty of those in its service. A considerable number of employees in the office forces and in the mechanical

departments have been in the service of the Association for from fifteen to thirty-five years and, in a few instances, for even longer periods.

Summary

Gross income from all sources for the year 1941 amounted to \$1,939,127.39, representing an increase over the preceding year of \$62,773.59. Income received from Fellowship dues and subscriptions was \$795,460.48, exceeding income from the same source in 1940 by the sum of \$19,258.04. Income from the sale of advertising space was \$1,009,853.96, exceeding that received in the previous year by \$40,272.71. Interest received on investments in 1941 amounted to \$77,424.09 as compared with a similar income in 1940 of \$80,571.91. The face value of defaulted or partially defaulted bonds amounted to \$43,400, and the accumulated unpaid interest on such bonds was \$4,620. The cost of paper used in the publication of THE JOURNAL was greater in 1941 than in the preceding year by the sum of \$29,415.64. Expenditures incident to the operation of the various councils, bureaus and departments of the Association were \$460,513.58, approximately \$22,000 less than in the preceding year. Expenditures for legal services and investigations amounted to \$119,183.19 as compared with expenditures for the same purposes in 1940 of \$112,345.16. A new storage building, not yet completed, was erected during the year and will cost the Association approximately \$215,000. Net income for 1941 as shown in the Report of the Auditor was \$223,347.64, of which \$77,424.09 represented interest on investments. At the time of preparation of this report there were six hundred and forty-four persons in the employ of the Association.

The Journal of the American Medical Association

The amount of material published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has become so great that the Board of Trustees has determined to issue three volumes annually with an index in April, August and December in order to provide for bound volumes that can be of more easy use in libraries and for other purposes.

During the year modifications have been instituted making possible the use of special announcements on the cover of THE JOURNAL concerning important activities related to the war. These bulletins have met with wide approval from the medical profession.

The title of the section of THE JOURNAL devoted to Medical Preparedness has been changed to Medicine and the War. Complete cooperation from the Army, the Navy, the United States Public Health Service, the Procurement and Assignment Service, the Office of Civilian Defense, the Office of Defense Health and Welfare Services, the Selective Service System and, indeed, every other governmental agency has enabled THE JOURNAL to serve as an important medium with respect to keeping the medical profession aware of its responsibilities and its duties in relation to the war.

Special articles on the use of the United States Pharmacopoeia, on glandular physiology and therapy and on many other topics have been received by physicians with approval.

THE JOURNAL continues to serve as a medium for reports of the official bodies of the American Medical Association. Special sections devoted to the work of the Council on Pharmacy and Chemistry, the Council on Physical Therapy, the Council on Foods and Nutrition, the Committee on American Health Resorts, the Committee to Study Air Conditioning, the Council on Industrial Health, the Council on Medical Education and Hospitals and many other bodies have been of immense value to the medical profession.

The war continues to interfere seriously with the receipt of correspondence and medical periodicals from foreign countries, although letters are received regularly from London and occasionally from France and Switzerland. In the meantime, arrangements have been made to cooperate with governmental agencies in promoting interchange of scientific work with the Latin American nations. THE JOURNAL now has regular correspondents in Buenos Aires, Argentina; Rio de Janeiro and

São Paulo, Brazil; Santiago de Chile; Havana, Cuba, and Mexico City. Through cooperation with the American Library Association, arrangements are being completed whereby interchange of scientific publications even with the warring nations will be facilitated. This will, of course, add to the material utilized in the Current Medical Literature department of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

TABLE 1.—Approximate Count of Fellows and Subscribers on The Journal Mailing List, by States, Jan. 1, 1942; Also Gain or Loss in Each State

State	Fellows	Subscribers	Totals	Gain	Loss
Alabama.....	581	301	882	44	..
Arizona.....	236	142	378	15	..
Arkansas.....	391	174	565	..	2
California.....	4,180	2,675	6,855	255	..
Colorado.....	637	318	955	30	..
Connecticut.....	1,034	678	1,712	11	..
Delaware.....	130	87	217	..	3
District of Columbia.....	638	597	1,235	..	8
Florida.....	502	500	1,002	105	..
Georgia.....	725	524	1,249	130	..
Idaho.....	143	97	240	..	5
Illinois.....	4,346	2,771	7,117	..	116
Indiana.....	1,732	598	2,330	..	85
Iowa.....	1,188	303	1,581	..	71
Kansas.....	820	327	1,147	17	..
Kentucky.....	745	401	1,146	23	..
Louisiana.....	744	525	1,269	163	..
Maine.....	301	165	526	..	23
Maryland.....	945	709	1,654	77	..
Massachusetts.....	2,648	1,655	4,303	109	..
Michigan.....	2,333	1,458	3,791	172	..
Minnesota.....	1,338	665	2,003	..	32
Mississippi.....	342	225	567	73	..
Missouri.....	1,811	814	2,625	..	40
Montana.....	202	101	303	..	11
Nebraska.....	604	235	839	..	51
Nevada.....	63	38	101	..	..
New Hampshire.....	276	117	393	25	..
New Jersey.....	2,524	1,500	4,024	..	5
New Mexico.....	146	88	234	..	10
New York.....	10,105	5,941	16,046	160	..
North Carolina.....	850	620	1,470	139	..
North Dakota.....	201	96	297	4	..
Ohio.....	3,563	1,374	5,237	76	..
Oklahoma.....	644	292	936	..	5
Oregon.....	454	235	779	21	..
Pennsylvania.....	5,097	2,074	8,281	236	..
Rhode Island.....	329	210	545	25	..
South Carolina.....	442	266	708	81	..
South Dakota.....	170	86	256	..	33
Tennessee.....	763	484	1,247	59	..
Texas.....	2,001	1,131	3,132	213	..
Utah.....	215	98	313	..	16
Vermont.....	167	72	239	..	18
Virginia.....	1,062	507	1,659	187	..
Washington.....	872	492	1,364	111	..
West Virginia.....	608	299	907	..	13
Wisconsin.....	1,356	500	1,946	..	58
Wyoming.....	102	60	162	9	..
U. S. Army.....	..	337	337	180	..
U. S. Navy.....	..	610	610	300	..
U. S. P. H. S.....	..	99	99	..	7
Alaska.....	29	46	75	27	..
Canada.....	10	729	739	64	..
Cuba.....	6	191	197	63	..
Hawaii.....	120	127	247	44	..
Mexico.....	8	162	170	22	..
Panama.....	26	65	91	23	..
Philippine Islands.....	49	212	261	25	..
Puerto Rico.....	73	95	168	33	..
Virgin Islands.....	..	4	4	..	2
Foreign.....	95	2,743	2,838	..	86
Advertisers and agents.....	..	..	487	..	27
Exchanges.....	..	..	244	..	67
Complimentaries.....	..	..	120	..	17
Total on mailing list.....	..	..	104,003	3,341	817

The Organization Section of THE JOURNAL has been especially devoted to consideration of modifications that have been developed in plans for wider distribution of medical service and of hospitalization. The factual data thus made available are of the utmost importance in guiding the development of such services.

The number of subscribers to THE JOURNAL continues to increase, although it is anticipated that the entrance of considerable numbers of physicians into military service may have a somewhat adverse effect on the circulation, at least temporarily.

Table 1 accompanying this report indicates the number of Fellows and subscribers on the mailing list of THE JOURNAL in each state and territory on Jan. 1, 1942 and also shows the number of Fellows and subscribers in other countries, the number of copies of THE JOURNAL sent to advertisers and subscription agents and the number sent as exchange or complimentary copies.

Table 2 shows the number of physicians in each state as indicated by the Sixteenth Edition of the American Medical Directory, the number of physicians in each state who receive THE JOURNAL and the approximate percentage of such physicians.

The net paid weekly average circulation in 1941 was 100,027 as compared with 98,002 in 1940. The delivery of material to some foreign countries has been entirely suspended, resulting in a reduction of the number of foreign subscribers. The total number of copies of THE JOURNAL printed in 1941 was 5,350,113.

Summary

The amount of material published in The Journal has become so great that it has been determined to issue three volumes annually with indexes in April, August and December.

During the year modifications were instituted, so that special announcements concerning important activities connected with the war now appear at intervals on the front cover. The title of the Medical Preparedness Section of The Journal has been changed to Medicine and the War. The close cooperation that has been maintained with practically every governmental agency has

TABLE 2.—Percentage of Physicians Receiving The Journal*

State	Number Receiving Journal	Physicians in A. M. A. Directory	Approximate Percentage Receiving Journal
Alabama.....	682	2,075	43
Arizona.....	378	504	64
Arkansas.....	565	1,829	31
California.....	6,855	11,909	58
Colorado.....	955	1,964	49
Connecticut.....	1,712	2,598	66
Delaware.....	217	339	64
District of Columbia.....	1,235	2,243	55
Florida.....	1,002	2,276	44
Georgia.....	1,249	2,825	44
Idaho.....	240	423	57
Illinois.....	7,117	12,188	58
Indiana.....	2,330	4,132	56
Iowa.....	1,581	3,084	51
Kansas.....	1,147	2,070	55
Kentucky.....	1,146	2,761	42
Louisiana.....	1,269	2,464	52
Maine.....	526	993	53
Maryland.....	1,654	2,998	55
Massachusetts.....	4,303	7,859	57
Michigan.....	3,791	6,302	60
Minnesota.....	2,003	3,527	57
Mississippi.....	567	1,497	38
Missouri.....	2,625	5,297	50
Montana.....	303	537	56
Nebraska.....	839	1,635	51
Nevada.....	101	167	60
New Hampshire.....	393	656	60
New Mexico.....	4,024	5,813	69
New York.....	234	439	53
North Carolina.....	16,046	27,396	59
North Dakota.....	1,470	2,740	54
Ohio.....	297	518	57
Oklahoma.....	5,237	9,318	56
Oregon.....	779	2,352	40
Pennsylvania.....	8,281	13,529	61
Rhode Island.....	545	961	57
South Carolina.....	708	1,402	50
South Dakota.....	256	568	45
Tennessee.....	1,247	2,908	43
Texas.....	3,132	6,698	45
Utah.....	313	575	54
Vermont.....	239	523	46
Virginia.....	1,659	2,829	57
Washington.....	1,364	2,200	62
West Virginia.....	907	1,834	49
Wisconsin.....	1,946	3,523	55
Wyoming.....	162	274	59

* This table gives the number of physicians (based on the Sixteenth Edition of the American Medical Directory) in the United States, the number receiving THE JOURNAL, and the approximate percentage in each state. Copies sent to the United States Army, Navy and Public Health Service are included.

enabled The Journal, through the publication of material in this section, to serve as an important medium for keeping the medical profession aware of its responsibilities and duties in relation to the war.

Special articles on many topics of immediate and important interest to the medical profession as well as reports prepared by the various official bodies of the Association were published during the year and were received with approval.

The war continues to interfere seriously with the receipt of medical periodicals from foreign countries, but through cooperation with the American Library Association it is probable that interchange of scientific publications will be facilitated, which will add to the material utilized in the Current Medical Literature department of The Journal. Arrangements have been made to cooperate with governmental agencies in promoting the interchange of scientific work with the Latin American countries.

Material published in the Organization Section of The Journal has proved to be of the utmost importance in guiding the development of plans for wider distribution of medical service and hospitalization.

The net paid weekly average circulation of The Journal in 1941 was 100,027, and the total number of copies printed was 5,350,113.

Special Journals

The special journals published by the Association have been continued with the scientific and editorial standards that have made them leaders in their field.

Because of conditions created by the national defense effort it was thought to be the part of wisdom to reduce the size of the special journals to some extent, so that the amount of scientific material which appeared in the pages of these publications was considerably less in the year covered by this report than in the preceding year and probably will continue to be less.

The special symposiums featured in the ARCHIVES OF SURGERY, which have concerned the abdomen and the bones and joints, have attracted much favorable attention. Also of significance have been the collective reviews which constitute one of the most important features of the ARCHIVES OF INTERNAL MEDICINE. Repeated requests have been received for reprints of these collective reviews.

The total number of subscribers to the special journals, not including WAR MEDICINE, in 1941 was 26,740 as compared with 26,356 in 1940. Two of the periodicals in this group showed a loss in the number of subscribers, these being the ARCHIVES OF SURGERY and the AMERICAN JOURNAL OF DISEASES OF CHILDREN, while each of the other special journals showed an increase.

Two of the special journals, namely the AMERICAN JOURNAL OF DISEASES OF CHILDREN and the ARCHIVES OF OPHTHALMOLOGY, showed an excess in income received over the cost of publication in 1941 as they did in 1940, the gain this year being considerably above that of last year. The ARCHIVES OF SURGERY showed a gain in 1941 of \$436.73 as against a loss in the preceding year of approximately \$6,750. The total loss incurred in the publication of the special journals in 1941, including that incident to the publication of the new journal, WAR MEDICINE, was less than the loss sustained in the preceding year by the sum of \$18,482.24.

War Medicine

WAR MEDICINE, established in January 1941, has been recognized as significant by the Army and Navy medical departments and by the United States Public Health Service. It has published material dealing with every aspect of the war effort.

The Division of Medical Sciences of the National Research Council indicated recently the desirability of making this a monthly publication. However, complicating factors from the point of view of publication have temporarily delayed such action.

The abstracts in WAR MEDICINE have been an especially useful contribution and are being widely reprinted in British and Canadian publications. Incidentally, all this material is made available, in advance of publication, to the Medical Research Council of Great Britain.

WAR MEDICINE is now widely recognized as a notable contribution of the American Medical Association toward national defense.

The cost of publication of this periodical during its first year was slightly in excess of income received.

Hygeia

Constant effort has been made to effect improvements in the quality of material appearing in the columns of HYGEIA and to publish articles and editorials of timely interest, authentically informative in character. There seems to be no doubt that the reader interest in this magazine has definitely increased. A considerable number of articles originally published in HYGEIA have been reprinted in the *Reader's Digest*, a publication with a large circulation, and articles and editorials have been widely quoted in lay publications throughout the country.

The average monthly circulation of HYGEIA was well maintained during the year covered by this report, having been in excess of 100,000 copies. There was an increase in the percentage of subscription renewals as compared with the previous year.

The fine support of the Woman's Auxiliary has played an important part in introducing HYGEIA to new readers and in making it available to public and semipublic institutions in various communities. Through the efforts of the auxiliaries, HYGEIA has been placed in a considerable number of schools and hospitals and in reading rooms of women's clubs and other organizations. Most highly commendable was the effort of the Woman's Auxiliary to the Medical Society of the State of Pennsylvania, which resulted in placing HYGEIA in every junior and senior high school in that state.

The advertising income of HYGEIA was in some instances unfavorably affected by the prevailing uncertainties in business and industry. Some advertising contracts were canceled and in some instances the amount of space used by advertisers was reduced, but these losses were more than met by the amount of new advertising secured.

Total income received from all sources for the fiscal year covered by this report was \$266,172.38, while total expenditures for the same period amounted to \$250,434.32. It is gratifying to report that for the first time in several years HYGEIA credits were greater than debits, in the sum of \$15,738.06.

An actual count made in December 1941 showed that the total number of subscribers at the time the count was made was 114,000, distributed among 15,543 physicians and 98,457 others.

Summary

Constant effort was made during the year covered by this report to improve the quality of material appearing in Hygeia, and reader interest definitely increased. Articles and editorials from the columns of this magazine have been widely quoted and reprinted in lay publications. The Woman's Auxiliary to the American Medical Association and its state auxiliaries have continued their fine work in introducing Hygeia to new readers and in placing the magazine in schools, hospitals and reading rooms of many organizations.

The average monthly circulation during 1941 was in excess of 100,000 copies, and there was an increase in the percentage of subscription renewals. The total number of subscribers by actual count in December 1941 was 114,000, distributed among 15,543 physicians and 98,457 others.

While advertising income in some instances was curtailed, the loss thus incurred was more than met by new advertising secured. For the first time in a number of years credits exceeded debits, by the sum of \$15,738.06 for the year 1940.

Press Relations

The effectiveness of the press relations activities of the Association, carried on under the supervision of the Editor of THE JOURNAL, is testified to in numerous unsolicited comments by disinterested persons.

Under the heading "A. M. A. Press Releases" the world famed daily newspaper *Greenwich Time*, in an editorial in its issue of April 21, 1941, declared that "Whatever may be the faults of the American Medical Association . . . it has an excellent public relations department. From Chicago come frequent and readable stories of the progress of medicine, which let us know that each succeeding time we get sick we've got a better chance of getting well. . . ."

In a recent letter to the Editor of *THE JOURNAL* the managing editor of the Miami (Fla.) *Herald* made the following unsolicited statement: "I should like to take this occasion also to tell you how valuable I have found the American Medical Association news releases to be. Such material as we have used always has found a healthy reader response. . . ."

Despite the space limitations in newspapers because of the exigencies of war, the number of stories based on articles appearing in *THE JOURNAL* and in *HYGEIA* which were used in American newspapers in 1941 exceeded that of 1940. During the past year more than eighty-one thousand such stories were published in the daily press of the United States in addition to a large number of feature stories and editorials based on information published or furnished by the Association. Of particular importance among the developments of 1941 was the large increase in the number of weekly newspapers using stories based on releases furnished by the Association. Newspaper stories and radio announcements are based on information released weekly through the *AMERICAN MEDICAL ASSOCIATION NEWS*, which contains abstracts of articles and announcements appearing in the various periodicals of the Association. In 1941 special editions of the *AMERICAN MEDICAL ASSOCIATION NEWS* were inaugurated containing abstracts of articles and announcements appearing in *WAR MEDICINE*. The same mailing list is used for the regular and the special editions of the *AMERICAN MEDICAL ASSOCIATION NEWS* and includes three hundred and twenty-five daily newspapers, eighty-two news services, radio stations and miscellaneous publications, forty-three local and state health departments, fifty health and tuberculosis associations, seventy-seven county and local medical societies, fifty-three state and territorial medical societies, eighty-four national medical organizations, sixty-one pharmaceutical associations and manufacturing companies, forty-six industrial organizations, nineteen educational institutions and twenty-four science writers. In addition, eighty copies are sent weekly to various constituent state and territorial medical associations for distribution to smaller newspapers in their states. All names on the mailing list have been placed there by request. Particularly noteworthy, in view of the necessity of exercising rigid economy in publication costs as related both to materials and to other expense, is the fact that more than three thousand more newspaper stories based on articles in the *AMERICAN MEDICAL ASSOCIATION NEWS* were used in 1941 than in 1940 without any increase in the number of copies of the *AMERICAN MEDICAL ASSOCIATION NEWS* that were distributed.

The soundness of the press relations program of the Association was demonstrated again during the Ninety-Second Annual Session in Cleveland. During the five days of the session the three Cleveland daily newspapers devoted a total of 1,737 inches of space to the session as compared with 1,573½ inches of space in the eight major New York City newspapers during the 1940 session.

During 1941 the number of inquiries regarding the various phases of medicine received from newspapers and radio stations was in excess of three thousand one hundred as compared with approximately two thousand in 1940. A considerable portion of this increase is due to inquiries pertaining to various medical phases of the war and is in itself evidence of the wide acceptance of the Association as an authoritative source of information on medical matters.

Other activities of the press relations department have expanded considerably, especially with regard to the furnishing of articles and information for use in special publications such as industrial house organs and medical supplements published by local newspapers under the sponsorship of medical societies. The number of special newspaper supplements aided by the department in 1941 totaled twenty-two as compared to twenty-one in 1940 and fifteen in 1939.

The facilities of this department have been utilized extensively by the American Red Cross and by governmental agencies. The press facilities for such meetings as the Association's Annual Congress on Medical Education and Licensure and the Annual Congress on Industrial Health have been handled by this department, and special assistance has been given to several state and county medical societies in their press relation pro-

grams. The material for the Medical News page appearing in *HYGEIA* each month also is furnished by the press relations department.

In addition to the releases contained in the regular and special editions of the *AMERICAN MEDICAL ASSOCIATION NEWS*, numerous special releases have been issued during the year pertaining to such matters as contaminated drugs and other information which it was deemed necessary to bring to the immediate attention of the public.

Library

The Library of the American Medical Association during 1941 continued to be of service in every possible way to the various councils, bureaus and departments in the headquarters offices, to governmental agencies, to state and county medical societies and other professional organizations and to individual physicians from all parts of the country.

In 1941, 2,806 package libraries were distributed in response to requests received from every state and the District of Columbia, the Canal Zone, Hawaii and Mexico. The package library service, principally because of the excessive mailing costs, has not heretofore been made available to physicians residing outside the continental United States and Canada. Two hundred governmental agencies, including army medical posts, marine hospitals and naval training stations, were accommodated through the package library service. Sulfanilamide, industrial diseases, anesthesia, vitamins, tuberculosis, war and national defense problems and aviation medicine were among the subjects most frequently requested.

The Library maintains a periodical lending service, and 12,833 periodicals were lent in 1941 in response to requests received from physicians in all parts of the United States as well as from a number of military and governmental agencies.

Approximately 6,650 reference questions were answered by the Library in 1941 as compared with approximately 5,550 similar questions answered in the preceding year. While most of the reference questions are answered by mail, more than 1,200 visitors called in person for Library service.

Indexes for *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* were prepared in the Library during the year as usual, and in addition much work has been done on the preparation of an index for the new edition of the *Standard Classified Nomenclature of Disease*.

The Library retains the medical periodicals which it receives for a period of ten years, and each year those discarded are offered to various medical libraries through the Exchange Service of the Medical Library Association. In 1941 periodicals published in 1929 were distributed to fifty-five medical libraries.

Employees of the Association who took advantage of the opportunity to read the books and magazines made available through the Employees' Library for an annual fee of 50 cents numbered 117 in 1941.

QUARTERLY CUMULATIVE INDEX MEDICUS

The material available for indexing for the *QUARTERLY CUMULATIVE INDEX MEDICUS* was somewhat curtailed in 1941. Periodicals were received from abroad quite regularly until June 1941, but since that time no periodicals have been received from Germany, France or Italy. Several hundred issues were borrowed from a Chicago library which had been fortunate enough to receive them. Through the efforts of the Joint Committee on Importations of the American Library Association, many foreign periodicals now held in Bermuda that are addressed to scientific libraries in the United States will soon be released and the issues thus secured will be indexed in the 1942 edition of the *QUARTERLY CUMULATIVE INDEX MEDICUS*. Since all exchange relations with periodicals published in Germany, France, Italy, Japan, the Philippines, China, Belgium, Rumania, the Netherlands, Finland, Norway and Denmark have been canceled, much foreign literature will be unavailable in 1942. The effect that war conditions have had on the *QUARTERLY CUMULATIVE INDEX MEDICUS* is indicated by the fact that the total number of articles indexed from periodicals published in foreign languages for inclusion in the Index was 25,514 in 1939.

and 24,312 in 1941. It is anticipated, however, that the INDEX will be much more affected in 1942.

There were seventy-six fewer subscribers to the QUARTERLY CUMULATIVE INDEX MEDICUS in 1941 than in the preceding year, but the loss incurred in its publication was less than in 1940 by the sum of \$5,388.12.

Summary

The Library of the American Medical Association has continued to be of service in every possible way to the various councils, bureaus and departments in the headquarters offices, to governmental agencies, to state and county medical societies and other professional organizations and to individual physicians from all parts of the country.

In 1941, 2,806 package libraries were distributed to all sections of the United States and, for the first time since this service was inaugurated, to the Canal Zone, Hawaii and Mexico. During the year covered by this report, 12,833 periodicals were lent by the Library, approximately 6,650 reference questions were answered, more than 1,200 visitors who called in person for Library service were accommodated, books and magazines were circulated through the Employees' Library to 117 employees of the Association, and indexes for The Journal and the new edition of Standard Classified Nomenclature of Disease were prepared.

War conditions have had an unfavorable effect on the amount of material available for indexing in the Quarterly Cumulative Index Medicus. No periodicals have been received in the Library from Germany, France or Italy since June 1941, and all exchange relations with periodicals published in Germany, France, Italy, Japan, the Philippines, China, Belgium, Rumania, the Netherlands, Finland, Norway and Denmark have been canceled so that much foreign literature will be unavailable and the Index more seriously affected in 1942. Although there were fewer subscribers to the Quarterly Cumulative Index Medicus during the past year, the loss incurred in its publication was less in 1941 than in 1940 by the sum of \$5,388.12.

American Medical Directory

As of Dec. 31, 1941, 7,279 copies of the Sixteenth Edition of the American Medical Directory had been sold, as compared with the total sale of 7,315 copies of the Fifteenth Edition. As this report is being prepared, it seems probable that the total sales of the Sixteenth Edition will equal and possibly may slightly exceed those of the Fifteenth Edition.

The publication of the American Medical Directory involves a tremendous amount of effort on the part of the Biographic Department. It is essential that the files of the Biographic Department shall be maintained to the highest possible degree of accuracy and that the information contained in these files shall be kept up to date. There can be no let-up in the work incident to the preparation and compilation of material to be published in new issues of the Directory. Preparations for the actual publication of the Seventeenth Edition of the American Medical Directory were begun in July 1941. The general make-up of this new edition will be similar to previous editions except that an effort will be made to list the names of physicians who have been called to active duty with the military forces in a manner to indicate that they are serving as medical officers. It will be necessary to use the home addresses of such physicians, since it will not be possible or desirable to publish their present addresses. The names of commissioned medical officers of the United States Navy, together with biographic data, will appear in alphabetical arrangement under the general address of Washington, D. C., with local addresses "Navy Department." Because of the great difficulties occasioned by the unusual and extremely large number of changes of address of physicians and because of the difficulty of maintaining necessary office personnel, there will be unavoidable delay in the issuance of the new Directory, which probably will appear about the first of July rather than in April or May as in previous years.

Advance subscriptions for the Seventeenth Edition of the American Medical Directory received as of Dec. 31, 1941 numbered 3,840, slightly less than the number of orders received at a corresponding time for the Sixteenth Edition.

Cooperative Medical Advertising Bureau

The Cooperative Medical Advertising Bureau served thirty-four of the official publications of constituent state medical associations during most of 1941. In September 1941 the Hawaii Territorial Medical Association established the *Hawaii Medical Journal*, which became the thirty-fifth member of the group of medical journals served by this bureau.

Commissions earned by the Bureau during the year ended Dec. 31, 1941 amounted to \$39,309.41. The expense incident to the operation of the Bureau was \$16,381.12. The cash discounts allowed in excess of cash discounts received amounted to \$1,928.29. Commissions remitted to state journals at the end of the year amounted to \$21,000. Such remittances are made in proportion to the total amount of advertising secured for each of the cooperating journals.

Mailing and Order Department

In 1941 the total number of pieces of outgoing mail of first and third classes handled through the mailing department, exclusive of copies of publications sent to subscribers, was 2,582,248. More than 635,000 pieces of first class metered mail went out from the Association's office in 1941, while an undetermined but large number of pieces of first class mail were sent out but not handled through the Mailing Department.

The Order Department in 1941 handled 72,017 orders involving the distribution of 404,042 items. More than 6,500 mail bags were used for the mailing of material which passed through this department.

Division of Drugs, Foods and Physical Therapy

On Jan. 14, 1941 the Division of Drugs, Foods and Physical Therapy lost the able leadership of its Director, Dr. Paul Nicholas Leech. Dr. Franklin C. Bing, Secretary of the Council on Foods and Nutrition, served as acting director until July 1, 1941, when Dr. Theodore G. Klumpp assumed the positions left vacant by Dr. Leech's untimely death.

Steps were taken during the year to bring the rules and policies of the three councils which comprise the Division into closer apposition, particularly those relating to testimonial advertising, and it is expected that a uniform statement of attitude will be adopted.

The Council on Pharmacy and Chemistry and the Council on Physical Therapy completed together a study of ion transfer in connection with the consideration of acetyl-beta-methylcholine, and a report was published in THE JOURNAL on Aug. 2, 1941.

The Cooperative Committee on Vitamins has been a valuable influence in coordinating and crystallizing the views of all three councils with respect to the many questions on vitamin therapy that have arisen.

Dr. Klumpp resigned as Director of the Division of Drugs, Foods and Physical Therapy and Secretary of the Council on Pharmacy and Chemistry in January 1942, and, pending other arrangements, the Board of Trustees has authorized the suspension of the Division.

COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry has continued its work of keeping the medical profession informed of new medicinal products and of promoting in all possible ways the development and progress of rational drug therapy. The Council's work has never been of greater importance than it is at the present time. While the Food, Drug and Cosmetic Act has been a beneficent influence in protecting the public and the medical profession from fraud and deception, it is highly important that there exist in the profession of medicine an organization qualified to express and crystallize the views of medical experts concerning the standards, actions, indications and dangers of drugs. This is a function which governmental agencies cannot adequately perform unassisted. Once the profession has made its own determination of the scientific facts

and has established a consensus, governmental agencies are then in position to invoke the machinery of law to implement the facts. The function of the Council on Pharmacy and Chemistry is primarily fact finding and educational, and it is altogether a wholesome thing that it should be exercised by an independent, professional group separate and apart from the function of law enforcement.

RELATIONS WITH GOVERNMENT AUTHORITIES

As an authoritative group in drug matters, the contacts of the Council with the Federal Food and Drug Administration, the Federal Trade Commission, the armed forces, the Office of Production Management and the United States Pharmacopeia and National Formulary groups have assumed ever increasing importance. The relations between the Council and these governmental groups have been maintained on the highest plane of service for the common good. In accord with its time honored policy, the Council has given every assistance within its power to the representatives of the government. It is gratifying to note that there were, during the past year, a greatly increased number of calls on the office of the Council from these sources for facts, information and other assistance. The Council takes pride in the contribution to the war effort which it has thus been able to make. It is also a pleasure to acknowledge that the Council has been able to increase its measure of usefulness to the profession and to the public through the facts and information made available to it by governmental agencies, particularly the Federal Food and Drug Administration.

In other ways the work of the Council has received added recognition during the year covered by this report. The state of New Hampshire by legislative enactment recognized New and Nonofficial Remedies as an authoritative compendium of drugs, along with the United States Pharmacopeia and the National Formulary. It is understood that New and Nonofficial Remedies is employed as a guide by the medical departments and purchasing agencies of the armed forces in determining whether or not drugs under consideration have obtained the recognition and acceptance of the medical profession.

WORK OF THE COUNCIL

In the field of new drugs the Council again has been concerned with the new developments in therapy with the sulfonamide drugs and the further rapid developments in the vitamin field. The only members of the sulfonamide group of which brands have not yet been accepted by the Council are sulfaguanidine and sulfadiazine. Consideration of brands of these drugs is proceeding favorably. Much of the Council's time has been taken up with consideration of brands of sulfapyridine, sulfathiazole and sulfanilamide. Through its scrutiny of promotional material and advertising copy, the Council has been highly successful in restricting the claims advanced for these important drugs to those which have been supported by adequate scientific evidence.

In addition to routine acceptance of brands of various already accepted vitamins the Council has accepted, during the year, pyridoxine hydrochloride and menadione. The former was accepted for investigational purposes only, and tests and standards for both have been elaborated. The Council also accepted a vitamin D₂ preparation marketed under the proprietary name "Drisdol."

Other important new products accepted by the Council during the current year are Acetyl-Beta-Methylcholine with the proprietary brand Mecholy Chloride; Adrenal Cortex Extract; the new anesthetics Cyclopropane and Amylcaine Hydrochloride; Aluminum Hydroxide Gel with the proprietary brand Creamalin, and the various Phenylmercuric Compounds—Merphenyl Nitrate (Basic), Merphenyl Picrate Tincture and Merphenyl Borate Tincture.

The Council has kept pace with the latest developments in serum therapy by accepting Normal Human Serum and Normal Human Plasma with various marketed brands, as well as Antipneumococcal Rabbit Serum Types 3 and 14. The Council is sponsoring investigations in connection with the consideration of other higher type Antipneumococcal Serums.

NOMENCLATURE

Because of new developments the Council has of recent years been much concerned with matters of nomenclature. During

the past year the Council adopted the nonproprietary term "Menadione" for the substance 2-methyl-1, 4-naphthoquinone, a synthetic vitamin K preparation. This term was subsequently adopted by the Revision Committee of the United States Pharmacopeia. The Council adopted the nonproprietary term "Diethylstilbestrol" for the diethyl derivative 4:4'-dihydroxy alpha:beta-diethylstilbene. This term has also been adopted by the Pharmacopeia Revision Committee. A system of nomenclature for noncrystalline estrogenic preparations was considered, and the term adopted is Solution of Estrogens or Solution of Estrogenic Substances. Forms other than solutions will use an appropriate term, such as Suppositories of Estrogens or Estrogenic Substances, and Tablets of Estrogens. These terms, of course, are all nonproprietary. The designation "Phenytol Sodium" was adopted as the nonproprietary name for sodium diphenyl hydantoinate. In the sulfonamide field the Council adopted the terms Sulfadiazine and Sulfaguanidine as nonproprietary designations for 2-sulfanilamidopyrimidine and sulfanilylguanidine respectively. At the instigation of the Council the United States Pharmacopeia Revision Committee adopted the terms "Isotonic Solution of Sodium Chloride" and "Isotonic Solution of Three Chlorides" to replace "Physiological Solution of Sodium Chloride" and "Physiological Solution of Triple Chlorides" respectively.

It should be emphasized that the work of the Council in drug nomenclature is exceedingly valuable in the prevention of confusion of terminology. In this field the Council works in close cooperation with the Nomenclature Committee of the American Chemical Society and other organizations having an influence on drug nomenclature. It gives all due consideration to the wishes of the discoverers of products which are to be named, urging, however, that any taint of therapeutic suggestion be avoided.

RULE 11 OF THE COUNCIL

Another function of the Council on Pharmacy and Chemistry which has received emphasis in the past few years is the consideration of the status of the firms under the Council's Rule 11, which is designed to prevent acceptance of products marketed by firms whose policies are in conflict with the principles of rational and scientific medicine. Since decisions in this matter must naturally be based on a judgment of the influence on rational therapeutics of a firm's policies and practices, every effort is made to provide objective criteria as a guide. At its meeting in October 1941 the Council considered an outline of objective standards, and it is anticipated that the use of this outline will greatly facilitate and expedite the considerations. If a firm is found satisfactory with regard to Rule 11, the Council proceeds to acceptance or rejection of submitted products, descriptions of which appear in THE JOURNAL.

PUBLICATIONS OF THE COUNCIL

New and Nonofficial Remedies.—Of outstanding importance was the adoption by the Council during 1941 of a proposal for the revision of the format of New and Nonofficial Remedies. This proposal provides for a more logical arrangement of drug groups into revised chapters, and the elimination of redundant printed material. As far as possible these changes will make their first appearance in the 1942 edition of New and Nonofficial Remedies. More than five thousand five hundred copies of New and Nonofficial Remedies were distributed during the year to physicians, manufacturers of pharmaceutical products, pharmacologists, governmental institutions and teachers. A similar amount in paper bound copies was supplied to the classes in pharmacology of recognized medical schools.

Epitome of the U. S. Pharmacopeia and National Formulary.—More than three thousand copies of the latest edition of the Epitome were distributed during 1941. It is popular with both pharmacists and physicians. A new edition will be prepared as soon as the next revisions of the Pharmacopeia and the National Formulary are released.

Useful Drugs.—Over four thousand, seven hundred and fifty copies of Useful Drugs were distributed during 1941 among practitioners and medical students, who are the principal users of this publication. The next revised edition is due in 1942.

American Medical Association Interns' Manual.—During the past year one thousand, one hundred and twenty copies of the

American Medical Association Interns' Manual were disposed of and at present a new edition is being prepared. The distribution of this volume has fallen off to some extent; it is believed that this is due largely to the fact that the text is in need of extensive revision to bring it up to date. The demand for the Manual since its introduction indicates that interns find this to be a very useful handbook.

Glandular Physiology and Therapy.—The new series of articles on the endocrines which has appeared serially in *THE JOURNAL* over the past year has now been collected in book form. This volume will detail the recent advances made in endocrinology almost up to the time of printing, as the articles themselves were revised before binding. This new edition should be of unusual value to practitioners, since it correlates the basic physiologic principles and the application of these to the practice of medicine.

REPORTS OF THE COUNCIL

The Council's reports of all kinds, with few exceptions, are first published in *THE JOURNAL* and later collected into a volume, *The Annual Reprint of the Reports of the Council on Pharmacy and Chemistry*. Reports fall roughly into the following groups: reports of omission or rejection, preliminary reports on products not yet ready for acceptance, and status reports on drugs or on various therapeutic or pharmacologic problems.

The Council during the year reconsidered the report on Bacteriophage Therapy by Drs. Krueger and Scribner, which supplements the previous reports of Drs. Eaton and Bayne-Jones, and, as a result of the restudy of the problem, the authors and the Council concluded that the accumulated clinical data are in some instances highly suggestive and warrant the continuation of further studies under thoroughly controlled conditions. Another question reconsidered was the dangers of Cinchophen and Neocinchophen. This restudy confirmed the Council's previously expressed opinion that these drugs should not be employed unless the attending physician feels that the patient's need fully justifies the demonstrated risk in using them.

During the year the Council gave consideration to various human convalescent serums and has accepted Human Convalescent Measles Serum and Human Convalescent Scarlet Fever Serum but feels that the evidence does not yet warrant the acceptance of Human Convalescent Poliomyelitis Serum and Human Convalescent Mumps Serum. A preliminary report on the status of these serums has been issued.

The Council gave extended consideration to the dangers of preparations containing petrolatum and vegetable oils as vehicles intended for introduction into the nasal cavity, a subject on which a report has already been published in *THE JOURNAL*, and a further report submitted for publication. In harmony with the attitude reflected in the report, the Council voted to eliminate from New and Nonofficial Remedies all nose drops and nasal sprays containing petrolatum. The evidence concerning the danger of nasal preparations containing vegetable oils was not considered sufficiently persuasive at the present time to warrant similar action. The Council similarly gave consideration to the use of halogenated vegetable oils for bronchography and issued a report.

In connection with the published acceptance of Human Blood Plasma and Serum, the Council issued a comprehensive report on the present status of these therapeutic agents, the value of which is being especially demonstrated under war conditions.

The Council sponsored a report prepared by Dr. M. L. Tainter on the Sympathomimetic Amines as Epinephrine Substitutes. This report is a valuable comparative study of these widely used drugs. It calls attention to several unsolved problems of their use and especially to the danger of addiction from amphetamine sulfate.

In the field of endocrinology the Council issued a preliminary report on Progesterone and the Status of Corpus Luteum Hormones Therapy. The Council decided that the time had not yet come to accept any preparation of progesterone and in another report definitely rejected a so-called "oral progesterone," pregnenolone.

MEMBERS OF THE COUNCIL

During the year Dr. James P. Leake was elected to membership on the Council, succeeding the late Dr. C. W. Edmunds. Drs. Rose, Sollmann and Sevringhaus, whose terms of membership expired during the year, were elected to succeed themselves.

Following the resignation of Dr. Theodore G. Klumpp as Secretary of the Council on Pharmacy and Chemistry in January 1942, Dr. Austin E. Smith, for some years a member of the Council's staff, was made Acting Secretary of the Council.

Aside from the exigencies created by the fact that our country is at war, the Council on Pharmacy and Chemistry faces a more than usually arduous year. Too much credit cannot be given to the efforts of the members of the Council whose only remuneration for the sometimes onerous burden of work is the realization of service to the cause of rational medicine, which is epitomized in the Council's motto "Non Sibi Sed Medicinæ." In this connection credit should be given to numerous consultants who have generously given their service to the Council in the consideration of questions relevant to their special fields of knowledge. A list of these consultants is published in each annual issue of New and Nonofficial Remedies.

Summary

The Council on Pharmacy and Chemistry has continued fruitful and satisfactory relations with various governmental agencies.

In the field of new drugs the Council has again been concerned with the new developments in therapy with the sulfonamide drugs and the further rapid developments in the vitamin field. More than usual attention has been given to matters of nomenclature, mainly because of the rapid development of new drugs. The main effort of the Council in this regard is to avoid the confusion caused by multiple names for the same drug and the evils of therapeutically suggestive names.

Publications of the Council have continued to enjoy satisfactory distribution. A new edition of the book "Glandular Physiology and Therapy" is in the process of preparation, and a radical revision of the format of New and Nonofficial Remedies is being made for the 1942 edition.

The Council has issued many important reports during the year, among the most important of which are those on bacteriophage therapy, the dangers of Cinchophen and Neocinchophen, various human convalescent serums, preparations containing petrolatum and vegetable oils for nasal inhalations and halogenated vegetable oils for bronchography, human blood plasma and serum, the sympathomimetic amines as epinephrine substitutes and the status of corpus luteum hormones therapy.

During the year the Council lost its Secretary, the late Dr. Paul Nicholas Leech, and a member of long standing, the late Dr. C. W. Edmunds.

COUNCIL ON PHYSICAL THERAPY

The Council on Physical Therapy has continued its duties of investigating and reporting on new apparatus offered to the profession for diagnostic and therapeutic purposes, publishing informative articles on reliable and effective physical therapeutic measures and advising research workers in the field. Emphasis has recently been placed on the publication of material considered valuable to those members of the profession engaged in the nation's war effort.

PUBLICATIONS OF THE COUNCIL

The Handbook on Amputations, recently published, contains practical information on the general principles governing all kinds of amputation, sites of election, physical therapy in amputations and mechanics of artificial limbs. The volume has already found favor with the profession. Over a period of three years the Consultants on Artificial Limbs have devoted considerable time and effort to reviewing the literature, gathering facts and opinions and assembling the material in short, concise articles which were first published in *THE JOURNAL*. Since this group of consultants was composed of leading orthopedic surgeons and of representatives of the Association of Limb Manufacturers of America, the Handbook is a reliable guide for physicians desiring the latest information on technique of amputation and on the most satisfactory prosthesis. The Council is indebted to the consultants for their untiring efforts.

A Manual on Physical Therapy, the contents of which have been published in WAR MEDICINE and have been collected in a small handbook, is ready for distribution. It is a short, concise summary of the pertinent facts pertaining to the therapeutic value of physical agents. The Council believes that it will be useful to medical officers in the Army and Navy and to physicians engaged in civilian defense work as well as to the general practitioner. The Subcommittee on Physical Therapy of the National Research Council cooperated in the preparation of this volume.

Apparatus Accepted, a Council publication containing a list of accepted products, has been revised, and copies are available on request to the secretary of the Council.

Articles and reports published under the auspices of the Council included "X-Ray Protection" by Lauriston S. Taylor, Ph.D., "Radiotherapy for Inflammatory Conditions" by A. U. Desjardins, M.D., "Corsets and Backache" by Frank R. Ober, M.D., "The Management of the Cerebral Palsies" by Winthrop M. Phelps, M.D., "Explosion Hazard in Anesthesia," "Interrelationships of the Artificial Limb Manufacturer, the Surgeon and the Patient," "Physical Therapy in Amputations," "Amputation in Congenital and Chronic Disabilities," "Reamputations and Secondary Amputations," "Ion Transfer," "Amputations in Diabetes Mellitus and Peripheral Vascular Disease," "Rehabilitation" and "The Manufacture of Artificial Limbs."

RESEARCH

Grants were awarded through the Council's Committee on Research in aid of research on the following subjects:

- A functional examination of respiration in obstructive diseases.
- A continuous record of the total daily amount of ultraviolet radiation of wavelengths 3,200 angstroms and shorter from the sun and the entire sky incident on a horizontal surface, in clear and cloudy weather, as function of the season and the geographic latitude.
- A survey of methods used in artificial respiration.
- Studies of the physiologic effects of short wave diathermy.
- An experimental study of the amplification afforded by hearing aids under conditions of actual usage.
- Further research on anesthesia by means of refrigeration in surgery of the extremities.
- Further development of method and portable apparatus for clinical determination of blood flow in the arm or leg.

Previous grants have yielded very gratifying results in basic scientific research.

ARTIFICIAL RESPIRATION

Research in the field of artificial respiration, both manual and mechanical, is being continued. The survey of methods used in resuscitating the asphyxiated individual has been prosecuted for two years, and the Council expects to continue it for at least five years.

The investigation and acceptance by the Council on Physical Therapy of apparatus for administering artificial respiration does not constitute a recommendation to abandon manual artificial respiration. In emergency cases, especially those occurring outside medical institutions, apparatus whether inhalator or resuscitator is seldom if ever at the site of the accident. A period of ten minutes to half an hour or perhaps longer elapses before an apparatus arrives. It is of paramount importance that artificial respiration be instituted immediately, and the public should be given instruction on how to administer approved methods of manual artificial respiration such as are described in the American Red Cross First Aid Textbook.

The Consultants on Respirators have aided the Council in its investigation of equipment used to provide artificial respiration over long periods of time such as for patients having poliomyelitis. When an epidemic of poliomyelitis strikes a community, the medical and hospital facilities especially with regard to respirators may be inadequate, and in an effort to relieve this situation to some degree the Council reviewed and adopted specifications for the construction of a homemade respirator. Reprints of "A Simple Workable Respirator" are now available. The homemade device is suggested for emergency purposes only. The more rugged commercially available equipment is recommended for prolonged treatment.

ULTRAVIOLET RADIATION

For several years the Council on Physical Therapy has given consideration to ultraviolet generators designed for germicidal purposes. Studies have been made of the effect of these lamps

in schoolrooms, hospital operating rooms and nursery cubicles. Available critical evidence indicates that the ultraviolet radiation from these lamps will destroy bacteria, provided the air borne germs come within direct range of the lethal ultraviolet rays. Bacteria lurking in the shadows or under opaque objects will not be affected; in fact, thin films of grease, oil and other organic and inorganic matter, even though transparent, will protect the bacteria from destruction. Cross infection may be eliminated only under certain conditions. For example, babies surrounded by mechanical barriers and "curtains" of ultraviolet radiation may be protected from cross infection, provided care is exercised to avoid contamination by some other means such as careless nursing practice. The Council's report "Requirements for Ultraviolet Lamps for Disinfecting Purposes" contains further information on this subject.

RADIO INTERFERENCE

The Council has continued its cooperation with the Federal Communications Commission in an effort to solve the problem of radio interference caused by diathermy apparatus. Three frequency channels, 13,665, 27,330 and 40,995 kilocycles per second, have been tentatively assigned, although the tolerances of these frequency channels have not been fixed.

AUDIOMETERS AND HEARING AIDS

Work on an acceptable procedure for estimating percentage loss of hearing has progressed, and the Council in cooperation with its Consultants on Audiometers and Hearing Aids expects to make a definite report in the near future. Careful investigations have been made of the various hearing aids and audiometers on the market, and reports have been published.

EDUCATION

The Consultants on Education, under the supervision of the Council, have contributed an important service in the dissemination of reliable information on the true values of physical therapy in the practice of medicine. It is gratifying to note that several schools of medicine which formerly had no undergraduate courses in physical therapy now include courses in their curriculums as a result of the efforts of the Council on Physical Therapy.

EXHIBITS

The Exhibit on Lame Backs was repeated at the Cleveland session in 1941 and was very successful. It will be presented again in 1942 with additional material. The Council provided exhibits during the year at the meetings of the American Academy of Ophthalmology and Otolaryngology and the American Congress of Physical Therapy.

INVESTIGATIONS AND REPORTS

The Council has continued its investigation of physical therapy apparatus and has published reports of forty-five acceptances and of nine rejections. Most members of the medical profession probably are not fully aware of the tremendous amount of material consisting of reports, articles, advertising and correspondence which the members of the Council are obliged to review during the year. The members of the Council on Physical Therapy receive no remuneration for their services but give freely of their time and energy.

Cordial cooperation has been maintained with the National Bureau of Standards, the American Standards Association, the Food and Drug Administration and the Federal Trade Commission.

Summary

The Council on Physical Therapy has continued its work of investigating apparatus offered for diagnostic and therapeutic purposes and reporting its decisions in *The Journal*.

During the year the Handbook on Amputations, the Manual on Physical Therapy and numerous articles on physical therapy were edited and published, and Apparatus Accepted was revised.

Several grants in aid of research have been made. Research in the field of artificial respiration is being continued and expanded. Specifications for ultraviolet lamps designed for disinfecting purposes have been compiled and adopted.

Cooperation has been maintained with the Federal Communications Commission in an effort to solve the problem of radio interference caused by diathermy apparatus.

Work has progressed on an acceptable procedure for estimating percentage loss of hearing. Hearing aids and audiometers have been investigated and reports published.

Through the efforts of the Council's Consultants on Education, courses in physical therapy have been included in the curriculums of several schools of medicine that were without undergraduate physical therapy instruction.

Exhibits on physical therapy were presented at two medical meetings.

Forty-five acceptance reports and nine reports of rejection have been published, while many more pieces of apparatus have been investigated.

Correspondence relating to physical therapy apparatus has become a major part of the Council's work.

COUNCIL ON FOODS AND NUTRITION

The Council on Foods and Nutrition has continued in every possible way its policy of cooperation with governmental agencies in matters that come within the scope of the Council, and the facilities of the Council will no doubt be utilized to an ever increasing extent as the war continues.

Members of the Council have served on a number of important advisory committees to government agencies, especially the Food and Nutrition Board of the National Research Council. The recommended daily allowances formulated and adopted by the Food and Nutrition Board were approved by the Council on Foods and Nutrition for purposes of judging nutritional claims in advertising. The National Nutrition Conference for Defense held in Washington in May 1941 received the active cooperation of the Council.

FORTIFICATION OF FOODS

The principal problems confronting the Council during the year covered by this report again have centered about the question of the fortification of foods with vitamins and minerals, and the Council has approved the enrichment of flour and of bread along the lines suggested by the National Research Council and developed by the Food and Drug Administration at public hearings. The Council has aided in the production of advertising material that promotes the use of enriched flour and bread in a truthful manner.

At the present time the Council believes that it is inexpedient and undesirable to add thiamine or other members of the vitamin B complex to sugar, syrups, candy, carbonated beverages and other products containing appreciable quantities of sugar. On the other hand, the Council favors the addition of vitamin A to oleomargarine and commends the Bureau of Animal Industry for removing its long time opposition to the presence of vitamins in establishments which prepare oleomargarine from fats of animal origin under federal inspection. In view of the action of the Food and Drug Administration to standardize vitamin A fortified oleomargarine at a level of 9,000 U. S. P. units of vitamin A to the pound, the Council raised its own standard of 7,500 U. S. P. units to this level as well. This amount is considered to be about the average vitamin A value for butter, but summer butter may contain more than 20,000 U. S. P. units of vitamin A to the pound.

The Council on Foods and Nutrition does not accept any general purpose foods other than milk when they are fortified with vitamin D. Evidence regarding the value of vitamin D fortified cereals is accumulating, however, and the Council is continuing to study this evidence. At the present time it appears that vitamin D is of value only in association with calcium and phosphorus. All evidence shows that the securing of a proper amount of calcium in the diet is fully as important as the vitamin D intake, and the Council has not given favorable consideration to the fortification of milk with more than the present accepted maximum quantity of vitamin D, which is 400 U. S. P. units to the quart. Milk fortified with 600 U. S. P. units of

vitamin D to the quart has been marketed, but the Council voted not to accept this product.

The question of mixed vitamin therapy was considered, and it was recommended to the Council on Pharmacy and Chemistry that favorable consideration be given to those polyvitamin preparations which are otherwise acceptable and which provide in the daily dose the various vitamins in quantities that are related in some uniform simple manner to the daily requirements of each. A general report on the subject has been prepared in cooperation with the Council on Pharmacy and Chemistry.

In cooperation with the Council on Industrial Health, consideration has been given to the question of indiscriminate vitamin administration to industrial workers. The Council on Foods and Nutrition disapproves this practice, although the value of vitamin therapy under the direction of a physician is recognized.

PROBLEMS AND PRODUCTS CONSIDERED

One of the most difficult problems before the Council has been the formation of a decision regarding tolerances for lead and arsenic in foods. Governmental authorities recently have raised the tolerance for lead and arsenic, but the Council on Foods and Nutrition voted to retain its old standards.

The Council gave further consideration to claims in advertising for the value of gelatin in combating fatigue and concluded that the evidence made available is insufficient to warrant any change in allowable claims for gelatin.

The tendency of firms to develop and promote the use of prepared dessert products especially for children was given careful study. The Council is of the opinion that desserts have no justified place in the dietary of the infant and will accept only those commercial products which contain a minimum of 50 per cent by weight of fruit or milk or a combination of fruit and milk.

The Council on Foods and Nutrition gradually is limiting its scope so that it may devote more attention to those products which are most important from the health point of view. This policy is being carried out gradually so that firms that have cooperated with the Council in its efforts to promote the preparation of good foods truthfully advertised would not be placed at a serious disadvantage.

Among the new products of interest that have been favorably considered by the Council have been various ingredients for use by bakers for the making of enriched bread, a new type of syrup made from corn starch by controlled hydrolysis, and an infant feeding preparation for infants that cannot tolerate cow's milk the feature of which is the adoption of a mixture of amino acids for the protein.

PUBLICATIONS

The book "Accepted Foods and Their Nutritional Significance" now is undergoing extensive revision. The supply of the book on the vitamins, which was developed in collaboration with the Council on Pharmacy and Chemistry, has been exhausted, and plans have been considered for the publication of a revised series of articles on this subject. The Council is planning to sponsor during 1942 a new series of articles on foods and nutrition.

CHANGES IN MEMBERSHIP

During the year the Council lost through death the services of Dr. Mary Swartz Rose. A distinguished nutritionist, Dr. Rose had served the Council faithfully for a number of years and had contributed greatly to the effectiveness of its work. Dr. C. A. Elvehjem of Madison, Wis., was elected to succeed Dr. Rose as a member of the Council.

This report of the Council on Foods and Nutrition does not by any means reflect fully the activities of the Council during the past year, for the reason that it would require a report of excessive length to present in detail all matters that have received official consideration and to mention all the problems and products that have been brought before the Council. The report discusses only some matters of the most important, immediate interest in the field of nutrition.

Summary

The Council on Foods and Nutrition during the year covered by this report continued in every possible way to cooperate with governmental agencies in matters coming within the scope of the Council.

The principal problems confronting the Council again centered about the question of the fortification of foods with vitamins and minerals, and the Council approved the enrichment of flour and bread along lines suggested by the National Research Council and developed by the Food and Drug Administration.

The Council at present believes it is undesirable and inexpedient to add thiamine or other members of the vitamin B complex to products containing appreciable quantities of sugar but favors the addition of vitamin A to oleomargarine and has raised its standard for this product to the level recently set by the Food and Drug Administration.

The Council does not accept any general purpose foods other than milk when they are fortified with vitamin D but is continuing to study the evidence regarding the value of vitamin D fortified cereals.

The question of mixed vitamin therapy was considered, and it was recommended to the Council on Pharmacy and Chemistry that favorable consideration be given to certain polyvitamin preparations.

The Council on Foods and Nutrition, in cooperation with the Council on Industrial Health, considered the question of indiscriminate vitamin administration to industrial workers and disapproved this practice.

Among difficult problems before the Council during the year were the formation of a decision regarding tolerances for lead and arsenic in foods, the consideration of claims in advertising for the value of gelatin in combating fatigue and the tendency of firms to produce and promote the use of prepared dessert products especially for children. The Council voted to retain its old standards with respect to tolerances for lead and arsenic, concluded that the evidence available is insufficient to warrant any change in allowable claims for gelatin and, since it is of the opinion that desserts have no justified place in the dietary of the infant, will accept only those commercial products which contain a minimum of 50 per cent by weight of fruit or milk or of a combination of fruit and milk.

The Council is gradually limiting its scope to devote more attention to those products which are most important from a health point of view.

Accepted Foods and Their Nutritional Significance, an official publication of the Council, is being revised and plans are being considered for the publication of a revised series of articles on the vitamins and a new series on foods and nutrition.

During the year the Council lost, through death, the services of Dr. Mary Swartz Rose, a distinguished nutritionist. Dr. C. A. Elvehjem was elected to succeed Dr. Rose as a member of the Council.

THE CHEMICAL LABORATORY

The Chemical Laboratory marked its thirty-fifth anniversary in October 1941. The Laboratory has functioned continuously during this period to supply accurate and critical chemical information to the medical profession, primarily in connection with the consideration of products submitted to the Council on Pharmacy and Chemistry. Because of continued rapid advances in the therapeutic armamentarium, the work of the Laboratory has consistently increased in amount and scope, and the record of years of careful, constructive and varied service is one of which the Association can be justly proud.

Dr. A. E. Sidwell Jr., a member of the Laboratory staff for several years, was made Director of the Chemical Laboratory following the untimely death of Dr. Paul Nicholas Leech, former Director.

TESTS AND STANDARDS

Each year brings forward many new synthetic therapeutic agents for which tests and standards must be elaborated and evaluated in connection with their consideration by the Council on Pharmacy and Chemistry and, in addition, numerous accepted products must be reexamined and new dosage forms of these

and of official drugs must be analyzed. During the past year the Laboratory has been particularly active in the preparation or critical consideration of standards for aluminum hydroxide gel, amylcaine hydrochloride, blended oils containing vitamins A and D, solutions and tableted preparations of calcium gluconate, delvalin sodium, dextrose in lactate-Ringer's solution, epinephrine in oil, mecholyl bromide and mecholyl chloride, merphenyl borate, merphenyl nitrate, merphenyl picrate, nikethamide, pyridoxine hydrochloride, seconal sodium, sulfadiazine and sulfadiazine sodium, sulfaguanidine monohydrate, sulfathiazole sodium and its hydrates, a number of antihemorrhagically active substances (vitamin K) including menadione and zinc insulin crystals and zinc peroxide medicinal. The complete roster of the products examined in the Laboratory during the year, exclusive of the various dosage forms of similar products considered, contains some seventy-two different therapeutically active substances.

Members of the departments of pharmacology of the University of Chicago and the University of Minnesota have cooperated with the Laboratory in problems concerning the standardization of epinephrine and sulfathiazole.

During the year the Laboratory has continued to give all possible assistance to other bureaus and departments of the Association and has cooperated with the laboratories of the American Dental Association, the Food and Drug Administration and many manufacturers in the exchange of chemical information concerning standards for the identity, purity and strength of various drugs.

From time to time, fellows of the International Health Division of the Rockefeller Foundation have been assigned to the Chemical Laboratory of the American Medical Association so that they might have opportunity to have the benefit of a period of basic training in drug analysis. Within the past year Mr. Jose Crusellas Ventura of Guayaquil, Ecuador, spent several weeks in the Laboratory. The members of the Laboratory staff greatly enjoyed and appreciated their association with Mr. Crusellas.

Members of the Laboratory staff have attended and addressed a number of meetings of chemical groups and have contributed original articles to important chemical publications. Work is in progress and plans have been formulated to augment the scope and efficiency attainable with the generally excellent laboratory equipment, particularly in connection with the facilities for microchemical and spectroscopic work.

Council on Industrial Health

INDUSTRIAL HEALTH AND WAR INDUSTRY

A recent joint session of the Council on Industrial Health with the Subcommittee on Industrial Health and Medicine of the Federal Security Agency indicates that the Council has established satisfactory contact and has perfected its own organization to an extent that will make it of genuine service in the prosecution of the war. Specific developments in this direction have been the following:

It was agreed that the medical profession is in better position to assume a greater degree of responsibility for industrial health activity than ever before. Medical societies in states and counties have been supplied with recommendations calculated to accelerate this process and have also been repeatedly instructed that the physician in community practice must be prepared to provide industrial health services in medium sized and small plants and that a high degree of organization will be necessary to meet the medical requirements of war time industrial production.

It was recognized that, if industry is to absorb the products of accelerated industrial health training, some concomitant program of instructing industrialists in the advantages of medical supervision over workers is highly essential. It is the feeling that an agency for public information, preferably attached to the Subcommittee on Industrial Health and Medicine, should undertake this educational activity. Failure to push this type of voluntary program vigorously might logically lead to compulsory forms of industrial medical supervision according to the present European pattern.

The Council has recognized that adequate personnel is basic to a solution of medical service in industry, and it intends to

cooperate in as effective a manner as possible with the Procurement and Assignment Service. Since this war is being fought on the assembly lines as well as in the field, it would be a serious error to strip industry of its competent and qualified medical personnel even though many of them happen to be within the age limits and degrees of physical fitness considered desirable for the armed forces.

Not much progress has been made in promoting cooperation between bureaus of industrial hygiene in state and local governments and the committees on industrial health in state and local medical societies. Much greater effort will be made in this direction in the coming months. Recent reports from the Division of Industrial Hygiene of the U. S. Public Health Service indicate that thirty-six states, four cities, two counties and two territories conduct industrial hygiene bureaus requiring an annual expenditure of \$1,000,000. Activities of this kind are of unusual significance now, and a program of reciprocal helpfulness between the bureaus and the profession at large can represent a real contribution to industrial production.

During recent months the registration of volunteers for placement in war industry has occupied a considerable share of activity at the headquarters office of the Council. The organization of the Procurement and Assignment Service suggests that henceforth the Council may serve as a source of information to employers who are anxious to secure assistance in obtaining and retaining the services of industrial physicians. Notification of this change in method will be brought to the attention of manufacturers, commerce and trade associations directly and through business and trade publications.

DICTIONARY OF INDUSTRIAL HEALTH

The scope of the Dictionary of Industrial Health, a project which began as a contribution toward standardization in the field of industrial health nomenclature, has been successively expanded until the title "Dictionary" seems most applicable. Publication of this compilation will tend to stabilize accepted procedure in industrial health at a time when much interest in terminology and technic exists. It is expected that editorial revision by consultants and in the Council office will have been completed by early fall.

EDUCATIONAL ACTIVITY

The Council on Industrial Health has been requested by the Council on Medical Education and Hospitals to assume the initiative in calling the attention of educators and the profession at large to deficiencies in industrial medical education. A report has been prepared, representing a joint declaration by the Council and a special committee of the American Association of Industrial Physicians and Surgeons, containing definite recommendations about the importance of better teaching and its organization and content. This outline can be used, with suitable modifications, for the organization of continuation studies of the introductory or refresher type under medical society sponsorship or in medical schools. The material also can be adapted to extended periods of training designed to equip physicians as specialists in industrial practice.

The Council has recognized health education as a proper function of industrial practice, and special attention has been given to the employment of HYGEIA as a means for acquainting employers and workers with the advantages of industrial health, its proper objectives and its methods.

In other respects the general details of the Council's educational activities continue as reported in previous years.

RELATIONSHIPS WITH GROUPS AND ORGANIZATIONS

Committees on Industrial Health in State and County Medical Societies.—Major emphasis must continue to be placed on improving the character of membership in cooperating committees on industrial health in the state medical societies and on extension of this type of organization down into the county societies. Field activity by the Council's headquarters organization will serve to encourage improved regional and local leadership as well as to recommend specific programs of investigation, correlation and education. Industrial Health Bulletins continue to serve as a means of interchange of expression between these committees and the Council. This activity, in

the opinion of the Council, exceeds all others in terms of practical results.

Sections of the Scientific Assembly.—The steps taken to arouse interest in industrial health in the sections of the Scientific Assembly through the creation of advisory committees have been remarkably productive. These sections are great reservoirs of authoritative information and have already served as sources of sound advice and help in the solution of special problems.

Other Agencies in the American Medical Association.—The Council has completed its first series of recommendations of objectives and functions in industrial health, entitled "An Outline of Procedure for Physicians in Industry," also reviewed and approved, after modification, by the Judicial Council. It is expected that this outline will demonstrate to the profession at large that industrial practice can be conducted ethically, scientifically and efficiently in full recognition of the best interests of the worker, employer, official agencies and the community at large.

A joint report has been prepared by representatives of the Council on Foods and Nutrition and the Council on Industrial Health on indiscriminate administration of vitamins to industrial workers, which effectively answers the many inquiries received about promotional activity among employers by manufacturers of vitamin products.

It has been recommended that the Council on Industrial Health develop an industrial medical formulary in collaboration with the Council on Pharmacy and Chemistry and with such additional help as may be necessary from the advisory committees of the sections of the Scientific Assembly. This formulary would define general standards to be applied to preparations and equipment, protective rather than therapeutic in nature, designed for use in the medical management or control of industrial exposures. A development of this kind would tend to avoid the necessity for setting up machinery to pass judgment on or approve individual preparations or equipment.

The Council has reviewed, with representatives of the Council on Physical Therapy, certain problems relating to the nomenclature of respirators.

Members of the Council have been requested to prepare radio scripts on industrial health subjects of general interest as a part of the broadcasting program of the Bureau of Health Education.

Industrial Nursing.—The Council on Industrial Health has maintained its interest in industrial nursing, especially in view of a strong movement by nursing and public health organizations toward providing a program of service to small industry, which depends mainly on part time employment of personnel from visiting nurse associations. Since the physician must be the central figure in any completely dependable industrial health activity, these developments must be regarded with unusual interest by medical organizations. However, the Council expects to promote the professional status of the industrial nurse in every way possible and has recently responded favorably to an invitation to appoint a representative to act as consultant to a Committee of the American Public Health Association to Study the Duties of Nurses in Industry. Meanwhile the Council will engage, as necessity dictates, in independent investigation of industrial nursing activity, particularly in the preparation of standing orders for industrial nurses, part time nursing in industry at hourly rates, and a simple report form applicable for recording absences in small industry.

Manufacturing Organizations.—The Council has been interested in the industrial health programs in various stages of development of the National Association of Manufacturers and the U. S. Chamber of Commerce. Both organizations have investigated the merits of appraisal plans, and there is some prospect that a national campaign may shortly ensue to arouse interest in industrial health and to establish a means of appraising the efforts of established industrial medical services.

Organized Labor.—If the Council is to be regarded as an influential, impartial and unbiased agency representing medical opinion in the field of industrial health, it must give some consideration to the opinions of the beneficiaries of this form of medical activity. Study will be necessary to indicate the best means for acquiring information of this character and of giving it due consideration in the formulation of medical policy in this field.

INDUSTRIAL PHYSICAL EXAMINATIONS

Repeated requests for information outlining definite procedure in the conduct of preemployment and periodic physical examination have made it imperative that the Council prepare an outline covering this subject to be made available to physicians called on to organize services of this description in industry. In the preparation of this outline the principles already formulated by the American Medical Association on periodic health examinations will be adapted to industrial use.

OCCUPATIONAL DISEASE REPORTING

Available evidence indicates that occupational disease reporting is improving. Since progress cannot occur without reasonably dependable statistics on the nature and incidence of occupational disability, persistent effort will be made to arouse and sustain interest throughout the profession in this desirable practice.

WORKMEN'S COMPENSATION

In the early discussions which led to the formation of the Council on Industrial Health, much emphasis was placed on the necessity for improvement in workmen's compensation procedure. Medical relations in this field dealt largely with economic considerations—the provision of medical care, methods of payment, critical analysis of contracts for medical care and hospitalization, medical testimony and disability evaluation. Important as these activities have been, the Council now believes it desirable to supplement them through consideration of the structure and administrative practices of the industrial commissions themselves. Much improvement can occur in the direction of better adjustment between compensation authorities, the medical profession and rehabilitation agencies. The Council is led to this conclusion since it is apparent that legislation with respect to occupational diseases is being adopted without any reference to medical considerations in much the same fashion as occurred when compensation for industrial accidents was being adopted. This failure to consult medicine in fields where sound medical advice is urgently needed has already led to a great many loose and faulty administrative practices.

The Council, therefore, has appointed a Committee on Workmen's Compensation, whose first report contains the following specific recommendations:

That the Council on Industrial Health prepare a series of authoritative articles on prevailing medical opinion about various forms of actual or alleged industrially connected disability, these to be published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. Ability of physicians, lawyers, courts and administrators to refer to established medical opinion of this character should do much to eliminate unwarranted claims. Such a series of articles should also emphasize medicine's essential position in the administration of workmen's compensation and would improve the status of the physician in this respect.

That effort should be made to assure recognition of medicine's interest in all proposed compensation legislation, especially in respect to proper representation on administrative boards.

That there be presented, preferably annually in *THE JOURNAL*, data dealing with workmen's compensation practice with special reference to medical considerations, these reports to reflect progress or lack of it in the various states and in the country as a whole.

That the committee extend its membership to include physicians and experts who have broad experience in compensation procedure and who can assist in the promotion of a campaign to improve through statutory revision the present undesirable elements in medical relations under workmen's compensation.

The Council has been notified of efforts to define conditions under which tuberculosis may be considered industrial in origin. Great interest is manifested in this development, since a proposal to compensate for tuberculosis would open the doors to health insurance through the inclusion of many other comparable types of chronic disease. Furthermore, employers would tend to exclude all persons who have or have had tuberculosis from any employment.

INDUSTRIAL HEALTH RESEARCH

The Council has recently appointed a Committee on Research to define problems suitable for investigation, to recommend subsidization of suitable research projects by the American Medical

Association or others and to encourage investigations in harmony with the existing research programs of the American Medical Association and the National Research Council. It is also expected that there will be increasing necessity for the adoption of a program to support work which may be undertaken by cooperating committees of the sections of the Association's Scientific Assembly.

Summary

The Council on Industrial Health has held joint meetings with the Subcommittee on Industrial Health and Medicine of the Federal Security Agency and it has been possible to determine spheres of greatest usefulness under war time industrial production.

Although there has been much progress, great effort must be made to preserve existing qualified personnel and to create educational opportunities for industrial medical volunteers.

Better rapport should exist between committees on industrial health in medical societies and bureaus of industrial hygiene.

As in former years, much emphasis has been placed on educational activity, which has taken the form of annual congresses on industrial health, continuation study and extended training, publications, clearing house services and exhibits. One practical accomplishment has been the development of specific recommendations to medical schools concerning the organization, content and available facilities for improved undergraduate teaching. Results already obtained through field work have led the Council to conclude that this is far and away the most successful activity to date in arousing interest in practical organization for increased industrial health service.

The advisory committees which have been created in the sections of the Scientific Assembly have already demonstrated ability to undertake special assignments for investigation and report. Active cooperation has been maintained with many of the agencies in the headquarters establishment of the Association, and particularly noteworthy results are the "Outline of Procedure for Physicians in Industry" and a recent report on "Vitamin Administration in Industry."

The Council has continued its interest in auxiliary professional groups such as industrial hygienists and nurses. Current plans for promotion of industrial nursing services are of especial significance, and steps have been taken to represent medical opinion in these developments.

Self-appraisal plans as a means of rating the adequacy of industrial medical departments is regarded as of considerable importance, and the Council is prepared to advance these activities in all practical and effective ways. The best methods of reflecting the opinion of organized labor in the field of industrial medical policy are also currently being studied.

In response to repeated requests for a dependable program of industrial physical examinations, an outline of principles which will be in substantial agreement with those already formulated by the American Medical Association in respect to periodic health examinations is being prepared. Persistent effort will also be made to arouse and sustain interest throughout the profession in the desirable practice of reporting occupational diseases to agencies concerned with vital statistics.

The Council is now preparing to make some substantial contributions to certain perplexing problems in the field of medical relations under workmen's compensation, having in mind the growing trend toward indemnification for occupational disease. Present plans include the preparation of authoritative statements on prevailing medical opinion on forms of industrially connected disability which will be available to physicians, lawyers, administrators and others. There should be annual publication of statistical and other data on workmen's compensation practice, with special reference to

medical considerations. The Council is continuing its interest in the relationship between trauma and disease and is currently studying conditions under which tuberculosis may be considered industrial in origin.

The Council on Industrial Health has appointed a Committee on Research to promote investigation in the field of industrial medicine, surgery and hygiene in harmony with the existing research programs of the American Medical Association and the National Research Council. The special investigations undertaken by cooperating committees of the sections of the Scientific Assembly also will merit substantial support.

Bureau of Health Education

The work of the Bureau of Health Education has for the most part been directed along the same lines as in previous years.

During 1941 the Bureau received and answered approximately ten thousand letters from laymen. Correspondence with physicians and cooperating agencies included the receipt of and replies to almost five thousand letters, while miscellaneous mail, including communications stimulated by the Association's radio broadcasting program and exhibits at the Cleveland Health Museum, the Chicago Museum of Science and Industry, the Milwaukee Midsummer Festival and several state and county fairs amounted to approximately fifteen thousand pieces.

BUREAU PUBLICATIONS

Sixteen new pamphlets were added to the list of publications maintained by the Bureau of Health Education, while eight of the pamphlets formerly used were revised and four discontinued. More than two hundred and three thousand copies of the publications sponsored by the Bureau were distributed through the Order Department in 1941 in addition to one hundred and eight thousand others sent out in quantities by the Bureau. Eighty-eight thousand health posters were ordered by a large industrial concern for distribution to its employees as an insert in its house organ.

The Director and Assistant Director of the Bureau have cooperated as fully as possible with the Editorial Department of THE JOURNAL and HYGEIA. Thirty-nine articles originating in the Bureau of Health Education were published in 1941 in publications other than those of the American Medical Association.

RADIO PROGRAM

In cooperation with the National Broadcasting Company, the first series of Doctors at Work programs was completed in June, at which time the sixth season of dramatized network broadcasting terminated.

The success of the program Doctors at Work left no logical course open except to continue with a second series, in which the adventures of the same fictitious young doctor, now in a wartime setting in an industrialized home community, were continued. Unfortunately, the National Broadcasting Company was unable to schedule the second series at an evening hour. The hour accepted was 5 to 5:30 p. m., Saturdays, eastern standard time. Approximately one hundred stations, including three Canadian stations, were in the network to which the program was available.

State and county medical societies and the Woman's Auxiliary to the American Medical Association have continued their valuable cooperation in publicizing the Association's broadcasting program.

At the Cleveland session radio broadcasts were arranged in cooperation with five local and network stations. There were eleven local broadcasts, three broadcasts on the networks of the National Broadcasting Company and two on those of the Columbia Broadcasting System.

The radio library service maintained by the Bureau showed a sharp decline in activity during 1941. Two thousand, two hundred and forty-six copies of radio talks were sent out on request. Sixty-one state and county medical associations received radio material suitable for local broadcasting. The

Bureau also assisted in preparing or editing radio scripts for other organizations.

MEETINGS AND CONFERENCES

In 1941 the Director and the Assistant Director of the Bureau of Health Education appeared before one hundred and forty-eight audiences in various parts of the United States. These appearances involved more than 43,000 miles of travel, and communities in sixteen states were visited. It was not possible to accept all the invitations extended to the Bureau's staff; forty-seven such invitations had to be declined because of schedule conflicts or for other important reasons. Attendance at ten medical meetings addressed by the members of the Bureau's staff was one thousand, three hundred and forty-eight; one hundred and thirteen lay audiences were addressed with an attendance of more than thirty-seven thousand persons, and twenty-five addresses were delivered before audiences composed of teachers, nurses and members of other professional groups with an attendance of more than four thousand.

HYGEIA CLIPPING LOAN SERVICE

The HYGEIA clipping collections were lent to four hundred and eighty-one physicians in forty states and Canada to aid them in preparing speeches for lay audiences. Local HYGEIA loan collection projects are continuing to be initiated by several more medical societies. The continuation of this development tending toward decentralization reveals a wholesome trend and is, in fact, the only way in which this bureau can hope to meet all the health education needs of the medical profession.

COOPERATION WITH LAY ORGANIZATIONS

Joint Committee on Health Problems in Education (with the National Education Association).—The Joint Committee met in Atlantic City in February during the meeting of the American Association of School Administrators. Dr. Isaac Abt, a member of the Committee for thirty-one years, retired and was succeeded by Dr. Glenville Giddings of Atlanta, Ga. Dr. Charles C. Wilson, New York, was elected chairman of the committee for his third successive year, with Dr. Thurman B. Rice, Indianapolis, vice chairman, and Dr. W. W. Bauer, Chicago, secretary.

Deliberations of the committee had to do mainly with the publication known as Suggested School Health Policies and the preparation of a statement on the educational and nutritional aspects of school lunches and a supplement thereto dealing with sanitary requirements for school lunches.

A fifth Symposium on Health Problems in Education under the sponsorship of the Joint Committee together with the Section on Pediatrics, the Section on Preventive and Industrial Medicine and Public Health, the Section on Ophthalmology and the Section on Laryngology, Otology and Rhinology of the American Medical Association was held during the annual session of the Association in Cleveland.

American Association of School Administrators.—The Director of the Bureau of Health Education was appointed by the American Association of School Administrators to its 1942 Yearbook Commission on Health Education. This project, begun in 1940, was completed in 1941, during which year two meetings of the commission were held. The Yearbook appears to have been successfully completed and will be published early in 1942.

4-H Clubs.—The National Committee on Boys and Girls Club Work (4-H Clubs) continued in 1941 as in previous years. The recommendations of the Director of the Bureau of Health Education, who serves on this committee, looking toward the modification and the ultimate abandonment of the "healthiest boy and healthiest girl" contest have not yet been fully adopted, but there are some encouraging evidences that state leaders are beginning to interest themselves in further modifications of this contest.

National Congress of Parents and Teachers.—The National Congress of Parents and Teachers continues its summer round-up of the children, and the Director of the Bureau of Health Education continues as a member of the Advisory Board. Although the 1941 request that the Association furnish the congress half of its summer round-up blanks was approved,

the national congress has notified us that it will not request the blanks owing to the paper shortage

American Public Health Association—The Committee on Professional Education of the American Public Health Association, of which the Director of the Bureau is a member, met in New York late in the year and adopted a comprehensive set of standards and educational qualifications for health education personnel which, if adopted by the governing council of the American Public Health Association, recommended by the Conference of State and Territorial Health Officers, will probably serve as a basis for the merit systems in the several states receiving aid from federal social security funds

National Health Council—The Director of the Bureau of Health Education has been appointed by the Board of Trustees to membership on a Committee for the Study of Voluntary Health Agencies. This has not yet begun to function

Other Organizations—Among other organizations with which the Bureau has maintained cooperative relations are the American Camping Association (advisory board), National Organization for Public Health Nursing (advisory committee, community nursing service), National Conference for Cooperation in School Health Education (executive committee), General Federation of Women's Clubs (advisory committee) and American Museum of Health (scientific advisory board)

COOPERATION WITH STATE AND COUNTY MEDICAL SOCIETIES

The Bureau has continued to serve as a clearing house of information to state and county medical societies and to be of assistance in developing cooperative programs and satisfactory relationships between the medical profession and other organizations working toward similar ends

COOPERATION WITH GOVERNMENTAL AGENCIES

As in previous years, the Bureau has continued its cooperation with departments of the federal government and of state governments, including health departments and departments of education. It has also cooperated as fully as possible with local boards of health, school boards and libraries. The federal departments and divisions with which the Bureau has maintained cooperative relationship include the Federal Security Agency, Veterans' Administration, War Department, Department of Agriculture, Federal Works Agency, Department of the Interior and Department of Labor

The Director of the Bureau continues to serve on the General Advisory Committee of the United States Children's Bureau

PROTECTION OF RESEARCH

The Bureau of Health Education cooperated, as in the past, with the Committee for the Protection of Medical Research and distributed nearly five thousand copies of the pamphlet entitled "Animals in Research" to the members of graduating classes of recognized medical schools

A meeting of the Committee for the Protection of Medical Research with representatives from similar committees of other scientific agencies was held in Chicago on Feb. 18, 1941. Ways and means for carrying out the defense of medical research in a national defense and (then) possible wartime setting were discussed

WOMEN'S HEALTH INTERESTS

The Bureau conducted a survey of women's health interests, and a preliminary summary of the results was published in the Bulletin of the Woman's Auxiliary to the American Medical Association. The Bureau also prepared material on nutrition for use by the auxiliaries as a part of the nutrition conservation program of the Federal Security Agency

Summary

The Bureau of Health Education answered approximately ten thousand letters from laymen, five thousand from physicians and cooperating agencies and fifteen thousand stimulated by exhibits, health museums and radio programs. Sixteen new pamphlets were added to the list of publications, eight revised and four discontinued. More than three hundred and eleven thousand copies of Bureau publications were distributed in 1941. The Bureau contributed thirty-nine articles to publica-

tions other than those of the American Medical Association.

The radio series *Doctors at Work* was continued. Eleven local programs over five stations were broadcast during the Cleveland session, and programs were also broadcast over the networks. Approximately two hundred radio talks were sent out to state and county medical societies from the Bureau's radio library of almost a thousand titles.

The Director and Assistant Director appeared before one hundred and forty-eight audiences, involving more than 43,000 miles of travel in sixteen states and accounting for a total audience of approximately forty-two thousand, three hundred persons. Hygeia loan clipping collections were lent to four hundred and eighty-one physicians in forty states and Canada to aid them in preparing talks for local lay audiences.

The Bureau continued its cooperation with the National Education Association, the National Committee on Boys and Girls Club Work (4-H Clubs), the National Congress of Parents and Teachers, the General Federation of Women's Clubs, the American Public Health Association, the American Camping Association, the Joint Committee on Community Nursing Service and eight departments of the United States government. The Director continued to serve on the General Advisory Committee of the United States Children's Bureau and the 1942 Yearbook Commission of the American Association of School Administrators and was appointed to memberships on the Committee for the Study of Voluntary Health Agencies of the National Health Council and the Scientific Advisory Board of the American Museum of Health.

Miscellaneous projects included continued cooperation with the American Medical Association Committee for the Protection of Medical Research and a survey of women's health interests, a cooperative project with the Woman's Auxiliary to the American Medical Association

Bureau of Legal Medicine and Legislation

Mr. J. W. Holloway Jr., who has served as Acting Director of the Bureau of Legal Medicine and Legislation since the retirement of Dr. William C. Woodward, has been designated as Director

MEDICOLEGAL ABSTRACTS VOLUME 3

The first volume of *Medicolegal Abstracts* was published in 1932 and contained the abstracts that had been printed in *THE JOURNAL* during the calendar years 1926 to 1930 inclusive. The second volume was published in 1936 and contained the abstracts that had appeared in *THE JOURNAL* from 1931 to 1935. A third volume, now in the course of preparation, will include the abstracts that have appeared in *THE JOURNAL* from 1936 through 1940. It has been suggested that the value of these compilations would be greater if abstracts were arranged in accordance with their subject matter. Possibly this would be true. The type for the abstracts, however, is held over the five year period and the difficulty and cost of rearrangement of such a considerable amount of type have not been justified by the limited circulation of the first two volumes of the series. Since every effort has been made to provide an adequate index, the disadvantage of having the abstracts appear in the chronological order in which they were originally printed in *THE JOURNAL* is considerably lessened.

TAXATION OF ACCOUNTS RECEIVABLE

In *THE JOURNAL*, May 24, 1941, page 2426, there was published an abstract of a decision of the United States Supreme Court that focused attention on a problem which confronts the estates of physicians in connection with the payment of income taxes for the year of death. During his life a physician normally reports as income for federal income tax purposes the amounts actually received. By reason of a provision in the income tax law, however, for the year of death there must be reported not only the actual amount received but also a fair appraisal of the outstanding accounts on the books of the tax-

payer. The result of this requirement is that the reportable income for the year of death is artificially built up, bringing into play the higher surtax rates, and the estate of the deceased taxpayer may be subject to considerable strain to provide sufficient funds with which to pay the increased tax that necessarily results. This situation results from an amendment to the income tax law that was passed by the Congress in 1934. Prior to 1934, if a taxpayer died who had been on a cash receipts and disbursements basis for federal income tax purposes, the collectible accounts outstanding on his books at the time of death were not subject to income tax, even when collected.

The injustice of the present method of imposing income taxes on the taxpayer for the year of death has been given consideration by the Treasury Department. At the time this report is being prepared, the House Committee on Ways and Means is giving consideration to the formulation of a new revenue act. On March 3 the Secretary of the Treasury and his tax adviser appeared before that committee with recommendations for the act. The secretary pointed out that wartime rates make it imperative to eliminate as far as possible existing inequities which distort the tax burden on certain taxpayers. If the Congress follows the recommendation of the Treasury Department, an unjust burden will be lifted from the estates of taxpayers who have been on a cash receipts and disbursements basis for income tax purposes, especially the estates of physicians, dentists and other professional men.

Several suggestions as to procedures that a physician may adopt during his lifetime to lighten the income tax load on his estate were discussed in detail in a statement prepared by the Bureau and published in *THE JOURNAL*, Jan. 10, 1942.

PROTECTION OF CIVIL RIGHTS OF PERSONS IN MILITARY SERVICE

During the first world war the Congress passed a measure to protect the civil rights of persons in military service. A similar measure was enacted in 1940 to provide the same type of protection for those now serving. The broad purpose of the law is to free persons in military service from harassment and injury to their civil rights during their term of military service and thus to enable them to devote their entire energy to the defense needs of the nation.

This law applies to all members of the Army, Navy, Marine Corps and Coast Guard, to members of the United States Public Health Service detailed by proper authority for duty with the Army or Navy, and to those in training who are undergoing education under the supervision of the United States preliminary to induction into military service. Civil liabilities are not extinguished by this law, but enforcement is deferred in those cases in which the opportunity and capacity to meet such obligations are impaired by reason of military service. A detailed analysis of the law was published in *THE JOURNAL*, Jan. 24, 1942.

PRIORITIES AND MEDICAL SUPPLIES

The existent emergency has made it necessary that supplies of essential materials be preserved to promote the national welfare. Sources of supply have diminished or disappeared altogether and the accelerating need of raw materials such as chemicals, metals and rubber for war purposes has resulted in an accompanying scarcity for civilian use.

Provision has been made, however, for the release of sufficient material for the production of equipment essential to the delivery of adequate medical care to the civilian population. A copy of the order under which this was accomplished (Preference Rating Order No. P-29) was published in *THE JOURNAL*, Sept. 27, 1941, page 1103. Later a drastic curtailment of the use of rubber for civilian purposes became essential because of the Far Eastern situation. This order prevented the use of rubber for the production of many articles necessary in the practice of medicine. The original rubber order was subsequently modified so that items made of rubber necessary in the practice of medicine could be produced. An analysis of this modifying order was published in *THE JOURNAL*, March 14, page 905. Furthermore, physicians have been given a priority classification in the distribution of automobile tires to the extent that such tires are needed in serving patients. Physicians will, it is hoped and

believed, cooperate with the spirit of the classification that has been accorded them in this respect.

The priority system that has been formulated does not and cannot be expected to function without occasional inadequacies. While the procurement of health supplies has been provided for, difficulty has been experienced by some physicians in obtaining needed repairs to professional equipment because of the fact that Preference Rating Order No. P-100, relating to repairs, maintenance and operating supplies does not cover professional equipment owned by private practitioners of medicine; it does apply to equipment owned by hospitals, clinics and sanatoriums. This matter has been the subject of conferences between a representative of the Bureau of Legal Medicine and Legislation and the Health Supply Section of the War Production Board and it is expected that a solution will be announced shortly.

ADEQUACY OF SUPPLY OF NARCOTICS: RESTRICTIONS ON SALE OF PAREGORIC

Testifying on Dec. 17, 1941 before a subcommittee of the House Committee on Appropriations, H. J. Anslinger, United States Commissioner of Narcotics, expressed the belief that the supply of narcotics in the United States is sufficient to meet demands until 1945. Opium was obtainable from Turkey, he said, but the task of getting it to this country was a difficult one. That difficulty will no doubt increase. Concern was expressed by the commissioner, however, over the extent to which addicts are resorting to the use of paregoric to satisfy addiction, and a depletion of the reserve stock of the drug, built up to take care of military and naval needs and legitimate civilian use, was forecast unless the trend is halted. The commissioner pointed out that the per capita consumption of paregoric in this country is 1,500 per cent greater than it is in Canada, where sales are restricted to sales on prescription. He suggested that Congress will be asked to impose a similar restriction on sales of paregoric in the United States.

On March 25 there was introduced in the Senate a bill, S. 2405, by Senator George of Georgia, entitled "A bill to discharge more effectively the obligations of the United States under certain treaties relating to the manufacture and distribution of narcotic drugs, by providing for domestic control of the production and distribution of the opium poppy and its products, and for other purposes." The bill was introduced at the request of the Treasury Department to control the domestic production of the opium poppy and to insure an adequate supply of narcotic drugs for medicinal purposes in case of national emergency. Heretofore all opium for the manufacture of narcotic drugs has been imported. Present international conditions are of course making it increasingly difficult to obtain opium and, anticipating the possibility that the supply from abroad may be entirely shut off, the Treasury Department proposes in this bill to authorize the production of opium in this country under such strict government supervision as will insure against diversion to nonmedical use. The bill is pending in the Senate Committee on Finance.

COURT DECISIONS OF MEDICAL INTEREST

An ambiguity in the Harrison Narcotic Act concerning record keeping in connection with exempt narcotic preparations was clarified in a recent decision of the U. S. Supreme Court. That act, as far as the more potent narcotic drugs are concerned, excuses a physician from keeping records when he dispenses such drugs to patients on whom he is in personal attendance. With respect to the exempt preparations, the act imposes a duty of recordkeeping on "any manufacturer, producer, compounding, or vendor (including dispensing physicians)" of such preparations. The use of the designation "dispensing physicians" has led to the belief that the act imposes on a physician who dispenses any of the exempt preparations to a patient the duty of keeping a record of the transaction. In the case under discussion the Supreme Court said that Congress by using the words "dispensing physicians" clearly meant to exclude physicians administering to patients whom they personally attend.

The U. S. Supreme Court in another case, an abstract of which was published in *THE JOURNAL*, May 24, 1941, page 2426, upheld the action of the collector of internal revenue in including as income for the year of death a fair appraisal of

the interest of a physician in the accounts on the books of a partnership of which he was a member at the time of his death.

A decision by the Supreme Court of Nebraska clarified the law of that state with respect to the scope of osteopathy. The court said that a statute, such as obtains in Nebraska, granting a licensed osteopath the right to practice osteopathy in all its branches as taught in recognized osteopathic schools does not authorize such licenses to practice outside the recognized field of osteopathy, even if subjects outside the field are taught in such schools.

The Supreme Court of California, in a recent decision, upheld the action of a component county medical society in expelling a physician from membership. The physician involved in the case was charged specifically with a violation of a section of the Principles of Medical Ethics adopted by the society declaring it to be unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient or which interfere with reasonable competition among the physicians of the community. The charges against the physician involved his association with a county hospital. After the state medical association and the Judicial Council of the American Medical Association had sustained the action of the component society in expelling the physician, he appealed to the courts for relief. The California Supreme Court said that the courts are without authority to declare that a medical association is precluded from expelling a member who persists in practices which by the rules of the association, subscribed to in writing by the member, are unethical. Concerning any matter of policy involved in the adoption by the association of rules governing the conduct of members, the court was of the opinion that that was a matter for the membership itself to determine and that, in the absence of any showing that the policy adopted constitutes a violation of law, the courts will not undertake to interfere. Having agreed to be bound by the adopted rules, the court concluded, the physician was precluded from the judicial relief he sought.

FEDERAL LEGISLATION

Certification of Insulin.—The patent on insulin held by the University of Toronto expired on Dec. 23, 1941. Under this patent adequate standards of purity and strength of insulin had been maintained. To continue this protection to the users of the drug, it became necessary that Congress act promptly to pass necessary legislation. Such action was taken, and on December 22 the President signed a bill to amend the Federal Food, Drug and Cosmetic Act by providing for the certification of batches of drugs composed wholly or partly of insulin. The new law is composed of four sections. Section 1 amends the act named so that its prohibitions against forging, counterfeiting, simulating or falsely representing, or using identification devices without proper authority will apply in the case of such identification devices as may be required or authorized for insulin. Section 2 provides that a drug shall be deemed misbranded if it is, or purports to be, or is represented as a drug composed wholly or partly of insulin, unless (1) it is from a batch with respect to which a certificate or release has been issued under regulations to be promulgated by the Federal Security Administrator and (2) such certificate or release is in effect with respect to such drug.

Section 3 directs the Federal Security Administrator to establish, pursuant to regulations, standards of identity, strength, quality and purity for drugs composed wholly or partly of insulin and methods of assay to determine whether batches of such drugs, or packages therefrom, meet the standards prescribed by such regulations for such drugs. If a standard of identity, strength, quality or purity for insulin is set forth in any official compendium, such as the United States Pharmacopeia, the administrator may not prescribe any differing standard. Section 3 also requires the administrator to establish testing and certifying facilities and procedure and to issue certificates for batches meeting the requirements. As over age or improperly packaged or labeled insulin is unsafe, such certificates are to be effective only for the periods prescribed in the regulations, and the certified batches and drugs therefrom are to be protected by such certificate only for the prescribed period or for such part thereof as such drug meets the labeling and

other requirements prescribed in the regulations for the protection of the public.

Authority is contained in section 3 too under which the administrator may determine and set out in the regulations schedules of fees which will cover the cost to the government of equipping and maintaining the facilities and compensating the personnel required for making the tests and assays. Provision was made in this section for the release, prior to the promulgation of regulations, of insulin which, in the administrator's judgment, could be released without risk as to safety and efficacy. This authority was given to the administrator in order to permit him promptly to release batches of insulin which had already been passed by the Insulin Committee of Toronto University as being of the necessary strength, quality and purity, thus avoiding the risk of a shortage. Section 4 of the law is designed to expedite the issuance of initial regulations. It directed the promulgation of the regulations within forty-five days, and they have been so promulgated.

Hospitals, Health Centers and Clinics in Defense Areas.—On June 28, 1941 the President approved a bill to provide for the acquisition of public works made necessary by the defense program. This program, which called for an initial expenditure of \$150,000,000, was considered necessary because of the inability of many communities to cope alone with the demand for public works in the face of a phenomenal growth of population resulting from the expansion of defense industry and enlargement of military reservations and posts. The term "public work" as used in this legislation means any facility necessary for carrying on community life substantially expanded by the national defense program, especially schools, waterworks, sewers, sewage, garbage and refuse disposal facilities, public sanitary facilities, works for the treatment and purification of water, hospitals and other places for the care of the sick, recreational facilities, and streets and access roads.

Whenever the President finds in any area or locality that an acute shortage of public works necessary to the health, safety or welfare of persons engaged in national defense activities exists or impends which would impede national defense activities, and that such public works or equipment cannot otherwise be provided when needed or could not be provided without the imposition of an increased, excessive tax burden or an unusual or excessive increase in the debt limit of the taxing or borrowing authority of the community in which such shortage exists, the Federal Works Administrator will be authorized, among other things, to make loans or grants, or both, to public and private agencies to provide the needed public works. The term "private agency" is defined in the law to mean any private agency no part of the net earnings of which inures to the benefit of any private shareholder or individual. No department or agency of the United States, the law provides, may exercise any supervision or control over any hospital or other place for the care of the sick, which is not owned and operated by the United States, with respect to which any funds have been or may be expended under the law.

Pursuant to this law, projects have been approved for the construction of additional hospital facilities, health centers and clinics in defense areas in many states. The original appropriation was exhausted in the late fall of last year, and an additional \$150,000,000 has been appropriated. Projects are now being approved for construction under the new appropriation.

New Building for Army Medical Library.—On Sept. 24, 1941 the President approved a bill authorizing an appropriation of \$4,750,000 to construct a new building for the Army Medical Library and Museum and to purchase a site on which to construct the building. While the new authorization has been approved by the President, the money authorized by the bill must yet be actually appropriated by the Congress before the site can be acquired and the building constructed. Ordinarily when Congress authorizes an appropriation of money for stated purposes, the actual appropriation of that money follows as a matter of routine, but it now seems probable that the construction of the new building faces further delay.

Prostitution Near Military and Naval Establishments.—On July 11, 1941 the President approved a bill prohibiting prostitution within such reasonable distance of military and naval establishments as the Secretary of War and of the Navy shall

determine to be needful to the efficiency, health and welfare of the Army and Navy. The Secretary of War and of the Navy and the Federal Security Administrator are directed to take such steps as they deem necessary to suppress and prevent violations of this law and to accept the cooperation of the authorities of states and their counties, districts and other political subdivisions in carrying out the purposes of the law. It is specifically provided, however, that nothing in the law shall be construed as conferring on the personnel of the War or Navy Departments or the Federal Security Agency any authority to make criminal investigations, searches, seizures or arrest of civilians charged with violations of the law.

Disease Incidence in Railroad Industry—The Senate on July 22, 1941 agreed to a resolution submitted by Senator Wheeler directing the Railroad Retirement Board to investigate the incidence of injuries and diseases incurred by employees through employment in the railroad industry and the social and economic consequences of such injuries and diseases. The Railroad Retirement Board is to report to the Senate Committee on Interstate Commerce at the earliest practicable time the results of its investigation. The annual report of the Railroad Retirement Board for the fiscal year ended June 30, 1941 indicates that the investigation is under way and that the results when reported to the Senate Committee will provide a basis for legislation on compensation for railroad injuries. The Railroad Retirement Board, with the cooperation of labor and employer organizations, is apparently proceeding to obtain through reports from employers, supplemented by interviews with injured employees, information relating to the following matters: (1) the present cost of industrial accidents to the railroad workers in terms of settlements, judgments, legal fees, court costs, hospital expenses and so on, (2) the estimated cost of a workmen's compensation system and (3) the advantages or disadvantages to the injured employees and to the survivors of deceased employees of the present system of payments for injuries as compared with one or more possible workmen's compensation systems. The Retirement Board has been for some time engaged in the formulation of a workmen's compensation act to apply to employees of the railroad industry, but it is assumed that the completion of the draft will await the results of the investigations now being made.

Federal Aid to Increase Supply of Nurses for Defense—To provide funds to train nurses to meet the need for competent nursing services in connection with the national emergency, a bill approved by the President on July 1, 1941 authorized an appropriation of \$1,200,000. The amount originally appropriated proved to be insufficient, and an additional \$600,000 was authorized for use during the remainder of the present fiscal year. In authorizing this additional appropriation the House Committee on Appropriations said that during the first world war there were thirty thousand trained nurses in the military service. Prior to the outbreak of the present war the estimated need for additional nurses for military services was ten thousand five hundred by June 30, 1942. The committee stated that there is already a shortage of nurses for civilian needs and that the additional appropriation will permit training for about two thousand additional student nurses by enabling many schools to admit second classes this year, and to bring forward the admission of more classes to May or June.

Health in Areas Adjoining Military and Naval Reservations and Plants Engaged in Defense Work—For the fiscal year ending June 30, 1942 the sum of \$1,235,000 was made available to the United States Public Health Service to assist state and local health authorities in health and sanitation activities: (1) in areas adjoining military and naval reservations, (2) in areas where there are concentrations of military and naval forces, (3) in areas adjoining government and private industrial plants engaged in defense work and (4) in private industrial plants engaged in defense work. Of the total sum appropriated, approximately \$980,000, it was contemplated would be used in emergency health and sanitation activities in mobilization and war industry areas and the rest of the fund or approximately \$255,000, would be used to accelerate the program of the National Institute of Health in its studies and controls of industrial health hazards. As in the case of the appropriation for the training of nurses, the initial appropriation proved to be

inadequate and an additional \$1,295,000 was made available, principally for malaria control work in the vicinity of concentrations of military and naval personnel. In connection with this supplemental appropriation the Surgeon General of the Public Health Service was authorized to engage in emergency health and sanitation activities in defense areas "independently of the state and local authorities." The original appropriation for these activities was made available to enable the Surgeon General of the Public Health Service to assist state and local health authorities.

Employment of Osteopaths as Interns in Army Hospitals—A bill making appropriations for the military establishment for the fiscal year ending June 30, 1942, approved by the President on June 30, 1941, contained an appropriation "for the pay of interns who are graduates of or have successfully completed at least four years' professional training in reputable schools of medicine or osteopathy and not to exceed \$720 per annum each period." The intern system in Army hospitals was inaugurated shortly after the first world war in order to act as a means of securing physicians for the regular medical corps. In the fall of each year selections are made from fourth year medical students and internships are offered in army hospitals to the selectees each of whom is required to agree that following internship he will accept a commission and will serve for at least three years. The inclusion of the authority to appoint osteopaths as interns was objected to by the War Department on the ground that even if such appointments were made from schools of osteopathy the appointees could not qualify after the internship for commissions in the Medical Corps because they did not meet existing standards. On the recommendation of the War Department the Senate Committee on Appropriations deleted all reference to osteopaths in this particular provision, but on the floor of the Senate the deleted matter was reinserted.

Hospital Facilities for Veterans—During the past twenty-two years the government has made available a total of \$208,723,029 for the construction of hospital and domiciliary facilities for veterans. As of June 30, 1941 there were 61,849 hospital beds under the control of the Veterans' Administration. On the completion of new construction for which funds were available on June 30, 1941 there will be 63,791 hospital beds for veterans. During 1941 the sum of \$3,500,000 was made available for additional construction of hospital facilities and for major improvements at existing facilities. The current annual report of the Veterans' Administration points out that since June 7, 1924, when hospitalization was first authorized for veterans of all wars without regard to the origin of their disabilities, 1,548,675, or about 78 per cent of all admissions, have been for the treatment of disabilities not connected with service.

During the Seventy-Seventh Congress there have been introduced to date some eighteen bills proposing the construction of new veterans' hospitals in designated localities or proposing additions to existing institutions. No action has been taken on any of these bills. Another bill, H. R. 6241, introduced on Dec. 15, 1941 by Representative Rogers of Massachusetts, proposes to authorize such sums as may be necessary to provide sufficient hospital and outpatient dispensary facilities to care for the "rapidly increasing load of disabled veterans" and to enable the Veterans' Administration to care for its beneficiaries in veterans administration facilities rather than in contract temporary facilities and other institutions. This bill is pending in the House Committee on World War Veterans' Legislation. Furthermore, the Independent Offices appropriation bill for the fiscal year ending June 30, 1943, H. R. 6430, which has now passed the House carries an item in the amount of \$4,557,000 for major reconditioning, replacements and new construction of hospitals and domiciliary facilities for veterans. In the course of the hearing on this bill a question arose concerning hospital care of service men participating in the present war. In discussing this question the Administrator of Veterans' Affairs said that there has been much talk concerning the necessity of instituting immediately a large hospital building program and that Congress will undoubtedly be importuned by the veterans of the first world war to provide additional hospital beds at once. These veterans, General Hines stated, fear that the demands for hospitalization on behalf of the men serving in the present conflict will take priority over the hospitalization needs

of veterans of the first world war who are now or may hereafter be hospitalized because of nonservice disabilities. General Hines further said that Congress will be faced with a demand to hospitalize the veterans of the present war on the same basis as veterans of the first world war, that is, for service connected and non-service connected disabilities. The administrator advised against any hasty action in legislating for the second group at the present time. He forecast, however, that eventually hospitalization must be provided for the two groups on the same basis. With nearly eight thousand vacant beds in veterans' hospitals at the present time, however, General Hines did not feel that he could advocate the provision of any considerable number of additional beds immediately.

Chiropractors and United States Employees' Compensation Act.—A subcommittee of the House Committee on the Judiciary on Nov. 19, 1941 recommended to the full committee that the Tolan bill, H. R. 1052, be approved, to authorize chiropractors to treat the beneficiaries of the United States Employees' Compensation Act. The full committee has taken no action on the recommendation of its subcommittee.

Amendments to Soldiers' and Sailors' Civil Relief Act.—This act applies generally to transactions originating prior to its approval date, Oct. 17, 1940. One bill, S. 1842, which has been reported to the Senate with recommendations that it pass, proposes to amend the act to extend its benefits to mortgages and installment contracts originating subsequent to the date named. A companion bill, H. R. 6521, is pending in the House Committee on Military Affairs. The original act provides no relief in connection with leases for offices. A pending bill, S. 1569, which has passed the Senate, provides, among other things, for the termination of any lease covering premises occupied for professional purposes, where the lease has been executed on his own behalf by any person who is in military service by virtue of the provisions of the Selective Training and Service Act or of the joint resolution under which the President was authorized to call out the reserve units. Any such lease, the bill provides, may be terminated on thirty days' notice in writing delivered to the lessor by the lessee. Both the Senate bill and a companion bill, H. R. 4936, are pending in the House Committee on Military Affairs.

Amendments to Social Security Act.—Beginning with the report of the Technical Committee on Medical Care, proposals have been repeatedly advanced to provide federal aid in making disability payments to persons unemployed by reason of illness. The national health bill, sponsored by Senator Wagner several years ago, contained such a proposal. The annual reports of the Social Security Board and the testimony of its chairman before Congressional committees have emphasized the initial recommendation made by the Technical Committee. Whenever the proposal has heretofore been advanced, however, it has been definitely associated with plans to provide medical care to the sick workman to expedite his return to work and thus lessen the period for which cash disability benefits are required.

On Jan. 7, 1942 President Roosevelt in his budget message to the second session of the Seventy-Seventh Congress recommended "an increase in the coverage of old age and survivors' insurance, addition of permanent and temporary disability payments and hospitalization payments beyond the present benefit programs, and liberalization and expansion of unemployment compensation in a uniform national system." While the President made no reference to medical benefits, his recommendation must be considered against the background of governmental points of view expressed during recent years. It merits careful consideration. No bill has yet been introduced to translate the budget proposal into law, and until the details of that bill are known the proposal can be considered only with respect to its general implications. Some of these implications were referred to in an editorial that appeared in THE JOURNAL on March 7: "Disability Insurance and Hospitalization Benefits."

Bills are pending in the Congress awaiting action proposing to extend the federal old age and survivors' insurance benefits of the Social Security Act to certain employees of religious, charitable, scientific, literary or educational organizations, to extend aid to the physically handicapped, to provide financial assistance or other assistance including medical and dental aid

to needy transients, and proposing in other ways either to broaden the base of the act to include other beneficiaries or to provide additional benefits for employees now coming within the scope of the act. One resolution, introduced by Representative Celler of New York, proposes to create a committee of five members of the House of Representatives to study, investigate and report to the House on the proposals that have been made for amendment of the Social Security Act.

STATE LEGISLATION

The legislatures of forty-three states met in regular session in 1941. A brief reference to the more important laws, from the medical point of view, that were enacted in 1941 follows:

Basic Science Laws.—A basic science law was enacted in New Mexico requiring all applicants for licenses to practice any form of the healing art, before presenting themselves to their respective professional boards for examination and licensure, to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology to be given by a board of basic science examiners. This board consists of one doctor of medicine, one osteopath, one chiropractor and "two laymen learned in the basic sciences." A basic science bill passed both houses in Tennessee by substantial majorities but was vetoed by the governor the same day the legislative session ended, thus precluding any efforts to pass it over his veto. The Arkansas Basic Science Act was so amended as to exempt from its provisions "any person who was a resident practitioner of chiropractic on January 15, 1940, and to whom a license to practice chiropractic was issued by the State Board of Chiropractic Examiners prior to that date," thus, in effect, legalizing licenses which had been issued by the chiropractic board to persons who did not possess certificates from the basic science board.

Medical Practice Acts.—Amendments were adopted to the medical practice acts of Arkansas, California, Colorado, Connecticut, Florida, Missouri, Nebraska, New York, North Carolina, Oklahoma, Pennsylvania, Washington and Wisconsin. Of particular interest are provisions that will require licensed physicians in Arkansas, Oklahoma and Washington to register annually with their respective licensing boards and to pay an annual registration fee. Another Arkansas amendment authorizes the court in which a physician is convicted of a crime involving moral turpitude to revoke or suspend his license to practice in the state. At least six different bills to amend the medical practice act were enacted in California, one of them exempting physicians serving in the armed forces from the payment of the required annual registration fee and another authorizing the revocation or suspension of the license of a licensee who fails to use his name in connection with any "advertising of the medical business." A new Colorado law provides for the discontinuance of the licensing of midwives. The new Connecticut law, among other things, clarifies and simplifies the procedure in disciplinary actions. The Florida amendment eliminated those provisions of the prior law that required that of the ten members of the board of examiners five members should be "allopaths," three "eclectics" and two "homeopaths." The New York amendment exempts from the act a physician employee of the United States Veterans Administration while in the performance of his official duties. The North Carolina amendment provides specifically that any person practicing radiology, as defined, shall be deemed to be practicing medicine. Radiology was then defined to include the use of the fluoroscope, radium or roentgen ray for the purpose of examination, demonstration, diagnosis or treatment. The new Pennsylvania law amends the medical practice act in several important respects. Among other changes it redefined the practice of "medicine and surgery" as "the art and science having for object the cure of diseases of and the preservation of the health of man, including all practice of the healing art with or without drugs except healing by spiritual means or prayer." The term "healing art" was also defined as "the science of diagnosis and treatment, in any manner whatsoever, of disease or any ailment of the human body."

Cult Practice Acts.—A new Arizona law provides a separate practice act for the osteopaths, who are hereafter to be examined and licensed by an independent osteopathic board. Under the

prior law, osteopaths were licensed under the medical practice act by the board of medical examiners. Amendments to existing osteopathic practice acts were enacted in Arkansas, Georgia, North Dakota, Vermont and Wisconsin. The Georgia amendment specifically confers on osteopaths the right to utilize narcotic drugs in connection with their practice. The North Dakota amendment requires an osteopath to renew his license annually and conditions renewal on the payment of a fee of \$3 and proof that in the preceding year he has attended at least two days of the annual educational program and meeting conducted by the state osteopathic association, or its equivalent. The Vermont amendment requires osteopathic applicants to have graduated at schools of osteopathy after a four years course of nine months each rather than after a three years course of nine months each, as the previous law required. The Wisconsin amendment will require after June 1948 that applicants for licenses to practice osteopathy and surgery, in addition to present requirements, present satisfactory evidence of having completed two years of college work including physics, chemistry, biology and English in an institution accredited by the University of Wisconsin.

Existing chiropractic practice acts were amended in North Dakota, Oregon and Tennessee. The Oregon amendment, among other things, specifically proscribes the practice of naturopathy by chiropractors and imposes additional requirements on applicants for licenses. In Tennessee the amendment will permit chiropractors to palpate, analyze and adjust by hand tissues adjacent to the spinal column in addition to articulations of the spine. It provides too, as does the North Dakota amendment, that annual renewal of a license is to be conditioned on proof that the holder has attended in the preceding year the educational program arranged by the state chiropractic association.

In South Carolina a new law permits naturopaths to "use and practice phytotherapy [sic], minor surgery, obstetrics and gynecology, autotherapy and biologicals."

Medical Service Plans.—New California, Massachusetts and Ohio laws authorize nonprofit corporations to establish and operate voluntary nonprofit medical service plans whereby medical services will be provided at the expense of such corporations to such persons or groups of persons as subscribe to plans which entitle each subscriber to certain professional services by licensed physicians and surgeons in their offices, in hospitals and in the home.

Hospital Service Plans.—Laws were adopted in Kansas, Minnesota, Nebraska and North Carolina to permit nonprofit corporations to operate hospital service plans whereby hospital care may be provided by the corporations or by hospitals with which they have contracts for such care to persons who subscribe to plans which entitle each subscriber and his dependents to certain hospital care.

Premarital Examination Laws.—Laws were enacted in Iowa, Maine, Ohio, Utah and Vermont to require each party to a proposed marriage as a condition precedent to obtaining a license to marry to present a physician's certificate that he or she is free of syphilis or is not in a stage of that disease that can be transmitted to the marital partner. The Utah law in addition requires each party to be free from any venereal disease in a communicable stage. A bill similar to the Utah law was vetoed by the governor of Wyoming. A new Massachusetts law requires each applicant for a license to marry to present a physician's certificate that he has examined the applicant for evidence of any infectious disease declared by the state department of health to be dangerous to public health and that he has informed both parties to the proposed marriage of any disease detected. However, even if such a disease is found the parties may marry.

Antepartum Examinations.—Laws were enacted in California, Connecticut, Missouri, Nevada, Oregon, Utah, Vermont and Wyoming requiring a physician or other person engaged in the antepartum care of a pregnant woman, or attending at the time of delivery, to obtain a specimen of her blood at the time of the first professional visit or within ten days thereafter and to submit it to an approved laboratory for a standard serologic test for syphilis.

Narcotic Drugs.—What is cited as the Uniform Narcotic Drug Act was enacted in Maine in 1941. A similar bill was killed in New Hampshire.

The Uniform Narcotic Drug Acts of Arkansas, Florida, Iowa, Maryland, Minnesota, Montana, Nebraska, New York, Oregon, Rhode Island, South Dakota, Tennessee, Texas and Wisconsin were so amended as to provide that the act shall not apply to administering, dispensing or selling at retail any medicinal preparations that contain in 1 fluidounce or, if a solid or semi-solid preparation, in 1 avoirdupois ounce, not more than 1 grain of codeine or any of its salts. Under the Uniform Narcotic Drug Act a preparation is exempted if it does not contain in the quantities referred to more than 2 grains of opium, $\frac{1}{4}$ grain of morphine, 1 grain of codeine or $\frac{1}{8}$ grain of heroin. The Tennessee amendment also exempts preparations in the quantities stated that do not contain more than 2 grains of opium.

Summary

Medicolegal Abstracts.—A third volume of Medicolegal Abstracts, including those that appeared in The Journal from 1936 to 1940 inclusive, is in the course of preparation and will be published soon.

Taxation of Accounts Receivable.—Under existing law, the estate of a physician may be subject to strain to pay income tax for the year of the physician's death because of the fact that uncollected accounts must be included as income. The Treasury Department has recommended that Congress relieve the estates of taxpayers of this burden by changing the law so as to make the outstanding accounts on the books of a taxpayer at the time of his death taxable as collected.

Protection of Civil Rights of Persons in Military Service.—As more physicians enter military service, the provisions of the Soldiers' and Sailors' Civil Relief Act of 1940 assume greater importance to the profession. The broad purpose of this act is to free persons in military service from harassment and injury to their civil rights during the term of military service and thus to enable them to devote their entire energy to the defense needs of the nation. Pending legislation proposes further to extend the benefits of the act.

Priorities and Medical Practice.—War has made it necessary that supplies of essential materials be preserved to promote the national welfare. That necessity has brought in its wake a scarcity of certain materials for civilian use. Provision has been made, however, for the release of material for the production of equipment essential to the delivery of adequate medical care to the civilian population. Physicians have been given a preferred classification in the distribution of automobile tires, but only to the extent that such tires are needed in serving patients.

Adequacy of Supply of Narcotics.—The United States Commissioner of Narcotics believes that the supply of narcotics on hand is sufficient to meet demands until 1945 but expresses concern over the extent to which paregoric is being used by narcotic addicts. He forecasts a shortage in that drug if this trend is not halted and proposes that sales of paregoric be limited to sales on prescription.

Court Decisions of Medical Interest.—The United States Supreme Court holds that physicians who dispense attenuated narcotic preparations need keep no record of the transaction. That court also focused attention on the requirement that accounts on the books of a physician at the time of death are taxable under the income tax law. The Supreme Court of Nebraska clarified the law of that state with respect to the scope of osteopathy. The Supreme Court of California upheld the action of a component county medical society in expelling a member for infraction of the rules of professional conduct adopted by the society.

Federal Legislation.—A law has been enacted to safeguard the users of insulin. This legislation was necessary because of the expiration of the insulin patent under

which adequate standards of purity and strength of the preparation had been maintained.

The sum of \$300,000,000 was made available for the construction of community facilities in defense areas, including hospitals, clinics and sanatoriums.

While an appropriation has been authorized to construct a new building for the Army Medical Library and to purchase a site, the authorized sum has not been made available. Indications are that the completion of plans for the new building will be deferred until after the present emergency.

The better control of the incidence of venereal diseases among the armed forces was the objective of a law prohibiting prostitution within such reasonable distance of military and naval establishments as the Secretary of War and of the Navy shall determine to be needful to the efficiency, health and welfare of the Army and Navy.

The Railroad Retirement Board, under a resolution adopted by the Senate, is investigating the incidence of injuries and diseases incurred by railroad employees. The information is being assembled to form the basis of workmen's compensation legislation covering employees of the industry.

Federal appropriations have been made available to train additional nurses to meet the needs of the emergency and to enable the Public Health Service, either independently or in cooperation with local health authorities, to engage in health and sanitation activities in defense areas.

The employment of osteopaths as interns in army hospitals was authorized, but the War Department has not yet availed itself of that privilege. A subcommittee has recommended favorably a bill to permit chiropractors to treat beneficiaries of the United States Employees' Compensation Act, but the full committee has not followed the recommendation of its subcommittee.

Demands persist for the construction of additional hospital facilities for veterans. Seventy-eight per cent of all admissions to veterans' hospitals since 1924 have been for treatment of disabilities not connected with the service.

The budget message of the President recommended disability and hospitalization payments to workmen unemployed by reason of illness. No bill has yet been introduced to translate this recommendation into legislation, but it merits careful consideration against the background of prior governmental points of view expressed during recent years associating the supplying of medical care with the granting of temporary disability benefits during illness. Bills are pending to broaden the base of the Social Security Act to include employees now excluded and to grant additional benefits to employees now covered by the act.

State Legislation.—A new basic science act was enacted in New Mexico. The legislature of Tennessee passed such an act, but it was vetoed by the governor. The basic science act of Arkansas was amended to exempt chiropractors who were licensed prior to Jan. 15, 1940.

Medical practice acts were amended in Arkansas, California, Colorado, Connecticut, Florida, Missouri, Nebraska, New York, North Carolina, Oklahoma, Pennsylvania, Washington and Wisconsin. A new osteopathic act was enacted in Arizona, and existing acts were amended in Arkansas, Georgia, North Dakota and Vermont. Amendments to the chiropractic acts were enacted in North Dakota, Oregon and Tennessee and to the naturopathic practice act in South Carolina.

Laws to authorize medical service plans were enacted in California, Massachusetts and Ohio, and similar enabling laws were enacted in Kansas, Minnesota, Nebraska and North Carolina to authorize the operation of hospital service plans.

Premarital examination laws were enacted in Iowa, Maine, Massachusetts, Ohio, Utah and Vermont. Antepartum examination laws were enacted in California, Connecticut, Missouri, Nevada, Oregon, Utah, Vermont and Wyoming.

A uniform narcotic drug act was enacted in Maine. The narcotic laws of Arkansas, Florida, Iowa, Maryland, Minnesota, Montana, Nebraska, New York, Oregon, Rhode Island, South Dakota, Tennessee, Texas and Wisconsin were amended to bring within the purview of such acts the attenuated narcotic preparations with the exception of preparations that contain in 1 fluidounce or, if a solid or semisolid preparation, in 1 avoirdupois ounce, not more than 1 grain of codeine or any of its salts.

Bureau of Medical Economics

The census of physicians for the Committee on Medical Preparedness, assigned to the Bureau of Medical Economics in June 1940, continued to engage the entire time of most of the Bureau staff during 1941. The most essential work in medical economics was carried on by one associate, one stenographer and one clerk with some assistance from other personnel. The urgent demands of the medical preparedness program precluded the development of much new work in medical economics and created difficulty in maintaining the routine of the Bureau.

SURVEY OF MEDICAL PERSONNEL

The census of physicians began in June 1940. By July 16, 1940 medical preparedness schedules had been mailed to all physicians in the United States and its dependencies whose addresses were available. At this time 179,796 physicians were asked to provide the Committee on Medical Preparedness with information that could be used to classify physicians for military, civilian and industrial medical care.

Subsequent to the original mailing, approximately 6,000 schedules were sent to recently graduated or licensed physicians and others who for one reason or another were not included in the first mailing. Thus, a total of about 185,800 physicians received medical preparedness schedules. By Dec. 31, 1941 approximately 158,000, or about 85.8 per cent of the total number of those who received schedules, had filled in the information and returned the schedules to the Committee on Medical Preparedness in Chicago.

Since it was necessary to have a punch card of information for each known physician in the United States and its dependencies, the 85.8 per cent return left the original task 14.2 per cent short of completion. It was evident at about the middle of 1941 that some physicians for various reasons would not provide the committee with the desired information, and arrangements were made to prepare incomplete schedules for all who did not fill out a schedule themselves. Some of these incomplete schedules were filled in by the secretarial staffs of state or county medical societies, but most of them were prepared in the Bureau of Medical Economics.

At the close of 1941, either a complete schedule had been received or an incomplete schedule had been prepared for every known physician in the United States and its possessions. All these schedules have been edited and coded and the information placed on punch cards.

The original list is being revised continuously by the addition of the names of new physicians and the removal of the names of deceased physicians. Other revisions that must be made continuously are changes of physicians' qualifications and addresses and the designation of physicians who have been placed on active duty with the armed forces.

An extremely important service in connection with the census of physicians is the voluntary work of many prominent physicians who have quietly but painstakingly assembled confidential information relative to the professional qualifications of both specialists and general practitioners. This work has been completed for nearly 100,000 physicians and will continue until all lists have been completed. Because of the highly confidential nature of this information, these reports will not be published or made available for any except official purposes.

SPECIAL LISTS

Some of the lists that have been and are now being prepared for use in connection with military and civilian medical services are:

- Specialists by states.
- General practitioners by states.
- Commissioned officers by states and corps areas.
- Negro physicians by states.
- Specialists by year of birth and states.
- An alphabetical listing of all physicians.
- A geographic listing of all physicians.

Other lists that are being maintained for use in connection with Medical Preparedness and the Procurement and Assignment Service are:

- Essential members of the faculties of medical schools.
- Physicians reported by county and state medical societies as essential for the maintenance of the health of the local communities.
- Physicians now on active duty with the armed forces arranged by the states from which they entered the service.
- Refugee physicians.
- Graduates of unapproved medical schools.
- Physicians serving in some capacity with the Selective Service System.
- Changes of addresses.

Since all these lists require continuous checking and change, it should be evident that the census process is a continuing one which must be maintained to provide the latest and most reliable data pertaining to physicians in the work of procuring, assigning and conserving the medical resources of the United States.

The accumulation of data pertaining to the medical profession was undertaken primarily to provide information that would be useful to the Army and Navy in securing commissioned medical personnel. To accomplish this purpose it became necessary to secure lists of commissioned medical officers on duty and information from the surgeon generals of the Army and Navy to show the estimated requirements of commissioned medical personnel, the number and names of physicians who had been ordered to extended active duty and the names of physicians who had been considered for commissions but who, for some reason, had been rejected. It became necessary also to secure interpretations of and changes in regulations, copies of directives, and comments on policies of the medical departments of both the Army and the Navy.

Any report concerning the medical preparedness activities of the American Medical Association as conducted through the Bureau of Medical Economics would be incomplete and lacking in appreciation if it failed to acknowledge the complete, free and sympathetic cooperation that has been given by the surgeon generals of the Army and Navy and their administrative staffs and by other officials of the federal government.

COOPERATION WITH THE PROCUREMENT AND ASSIGNMENT SERVICE

In October 1941 the President of the United States approved the creation of the Procurement and Assignment Service as a part of the Office of Defense Health and Welfare Services. The function of the service is stated as follows:

The function of this office shall be to procure personnel from existing qualified members of the professions concerned. The office shall receive from various governmental and other agencies requests for medical, dental and veterinary personnel. These requests shall indicate the number of men desired, the time during which they must be secured, the qualifications and limitations placed on such personnel.

The office must then by appropriate mechanism arrange to secure lists of professional personnel available to meet these requirements, utilizing such existing rosters, public and private, as it may find acceptable. It shall also be authorized to approach such professional personnel as is considered to be available and to use suitable means to stimulate voluntary enrolment.

The board shall be authorized to establish such advisory committees and subcommittees as may be necessary. These committees shall represent the various interests concerned, such as medical, dental and veterinary schools, hospitals, Negro physicians, women physicians, etc. Members of such committees shall serve without salary but shall be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of their duties.

To enable the Procurement and Assignment Service to utilize fully the information assembled in the census of physicians by the Committee on Medical Preparedness of the American Medical Association, the Directing Board of the Procurement and Assignment Service established a consultant office at the

headquarters of the American Medical Association in Chicago, and Dr. Rosco G. Leland was appointed as supervisor of the consultant office.

Since the establishment of the Procurement and Assignment Service many lists of physicians' names have been sent to the consultant office for checking and clearance. These names are checked for race, year of birth, school and year of graduation, specialty, if any, and personal information. Information is provided when records indicate that the individual is not a doctor of medicine.

Requests have been received for complete lists of specialists. The preparation of all such lists is extremely time consuming, since the names must first be selected from among all thus far listed and then checked for all available information, after which the latest known addresses are supplied. In many instances it is necessary to trace a physician through four or more directory reports of change of address to supply the last known address. Every possible method of shortening the process of checking has been devised, but the preparation of special lists still consumes an enormous amount of time and it is done as expeditiously as is possible.

PREPAYMENT MEDICAL SERVICE PLANS

At the 1941 session of the House of Delegates, consideration was given to a recommendation relative to the establishment by the Bureau of Medical Economics of some method of coordination and interchange of material pertinent to the administration of prepayment plans for medical care sponsored by medical societies. An additional member of the staff of the Bureau was secured for this purpose.

Forms for the collection of experience data from prepayment medical care plans were developed and used in one state in 1939. In August 1941 these forms were revised and sent to the administrative officers of the prepaid medical care organizations sponsored by medical societies, with the request that suggestions for any changes in the forms be returned to the Bureau. The suggestions that were received were incorporated in further revisions of the forms, which were again distributed about the middle of December 1941 to the officers of the medical care plans for further study and comment.

The purpose of these forms was set forth in an explanatory statement which accompanied them and also in the letter of transmittal, and they were finally prepared for use.

As rapidly as experience data are received by the Bureau, they will be analyzed, consolidated and prepared for use by medical societies that contemplate the development of similar prepaid medical services. The Bureau of Medical Economics will then become a clearing point for factual data pertaining to organization, administration, types of coverage, incidence of demand for service, costs and methods of payment of services made available on a prepayment basis and sponsored by medical societies.

The tendency toward the inclusion of medical services in group hospitalization plans has been discussed in previous reports of this bureau. Proposals for ward care plans and for the consolidation of medical services and group hospitalization plans have been offered. These matters will, no doubt, be subject to careful study and consideration by the House of Delegates.

In most places where medical society sponsored plans have demonstrated a reasonable determination to attempt a solution of the problem of the distribution of medical services to the low income groups, no definite efforts to combine the benefits of medical and group hospitalization contracts have as yet culminated.

The House of Delegates has adopted principles to apply in the organization and administration of medical services and of hospital services. It is believed that these principles are sound and deserve more strict adherence.

No valid reason has been advanced to show that medical service organizations and group hospitalization plans cannot function separately as parallel services in communities that are sufficiently interested to support such efforts.

A new development in the group hospitalization movement is a proposal to make available under the Social Security Act a cash allowance of \$3 a day hospitalization benefit to employees

covered by the act who are unemployed because of sickness and who are in need of hospitalization.

The Wagner health bill, intended to implement the national health program, contained a provision to make available benefits to employees during the period of unemployment because of sickness. The House of Delegates, with some limitations as to the method of application, endorsed the principle of insurance against the loss of wages during sickness.

The present proposal has not progressed to a point of definite details that can be discussed specifically. However, this new movement seems to warrant the most careful consideration. It seems proper to inquire at this time whether an entirely new system of hospitalization is to be developed for employees entitled to benefits under the Social Security Act, or whether the present group hospitalization organizations are to be recognized or absorbed and expanded under proposed legislative enactments.

INDEX AND DIGEST OF OFFICIAL ACTIONS

In response to a demand for a convenient abstract of the official actions of the House of Delegates consolidated by subjects to include several years, the first edition of the Index and Digest of Official Actions of the American Medical Association was published in March 1934. This edition covered the years 1904 to 1933 inclusive. A supplement for the years 1934-1936 inclusive was published in 1937. A second supplement for the years 1937-1939 was published in 1940.

Although the arrangement of the material in each published group was alphabetical by subjects, the inconvenience and impracticability of assembling the abstracts in an ever increasing number of supplements became very clear. Accordingly, in 1941 all material that had been published, including the actions at the 1941 session of the House of Delegates, was rearranged and assembled in one volume arranged alphabetically. This volume comprises three hundred and twenty pages cut and punched to fit the loose-leaf binders that have been provided for the original publications. The new material, which is now ready for distribution, will be substituted for the sheets that are now being used.

It is recommended that in the future the Index and Digest be published in volumes rather than supplements, which accumulate as parts of one volume. The present rearranged sheets, which include the years 1904-1941 inclusive, would become volume I. Volume II would begin with the actions of the 1942 session and extend as far in the future as it seemed advisable, depending on the amount of material included in the Digest. Such an arrangement would facilitate the use of the material since the volumes would be kept small, but the arrangement in each volume would be similar.

PROGRAM OF FARM SECURITY ADMINISTRATION

A statement from Dr. R. C. Williams, chief medical officer in charge of the medical program for the Farm Security Administration, indicates that at present there are medical care plans sponsored by the Farm Security Administration operating in more than nine hundred counties in thirty-seven states. That program involves more than one hundred thousand families and includes more than half a million persons.

Quoting from Dr. Williams' statement:

As a result of much study and extended conferences, the desire has been expressed in several areas to undertake a program in an average rural county that would secure reasonably adequate medical care for all farm families in the county who desire to participate in the group medical care plan. Although, in general, any such experimental program would be patterned after the plan developed by the Farm Security Administration in cooperation with the organized medical profession, the program would endeavor to provide more complete care, including the correction of chronic physical handicaps that interfere with farm or household work, and a limited amount of dental service.

The thought is that the experimental county program would be a voluntary health insurance plan for all farm families in the county. This plan would be worked out between the county agricultural planning committee and the county medical society.

This proposal deserves the most careful consideration on the part of the House of Delegates, since it involves several subjects that have been previously considered but under somewhat different circumstances.

Such a program also deserves careful study in the light of some reports from rural areas to the effect that conditions

within those areas have changed in recent months and because of these changes, which appear to be improvements, emergency measures in the distribution of medical services do not appear to be longer needed.

PUBLICATIONS

During 1941 two of the publications of the Bureau were entirely rewritten. These titles are "Health Insurance in England" and "Basic Principles of Medical Economics." One publication, "Organized Payments for Medical Services," was completely revised.

Summary

In 1941 the medical preparedness work required the entire time of most of the personnel of the Bureau of Medical Economics. The initial part of the census of physicians was completed. There are now available for use 181,530 punch cards, which carry a large amount of information pertaining to the physicians of the United States. The census requires a continuing process to keep the information as nearly up to date and accurate as possible.

The Procurement and Assignment Service was created by order of the President in October 1941. The organization of this service included a consultation office at the headquarters of the American Medical Association in Chicago. Dr. R. G. Leland was appointed supervisor of the consultant office.

In compliance with the action of the House of Delegates in 1940, an additional member of the staff of the Bureau was secured and forms have been devised and put in use to secure data pertaining to the operation of medical service plans sponsored by medical societies.

The Index and Digest of Official Actions of the American Medical Association has been brought up to date in a single volume arranged alphabetically to include the original volume and the three supplements.

Developments in the field of group hospitalization have shown definite proposals to consolidate medical service contracts and group hospitalization contracts.

A proposal has been made to modify the Social Security Act to make available to employees covered by the act a cash benefit of \$3 a day hospitalization allowance. The details of this proposal are still too meager to permit any detailed discussion.

The Farm Security Administration medical care program is now operating in more than nine hundred counties in thirty-seven states. Benefits of this program are available to more than five hundred thousand persons. Reports seem to indicate that in some communities changed conditions make the need for such programs less urgent than they were some time ago.

Bureau of Investigation

The Bureau of Investigation has continued to play its part in the educational activities of the American Medical Association. The work of the Bureau consists primarily in receiving and dispensing information concerning so-called patent medicines, quackery, frauds and faddists.

INQUIRIES RECEIVED

Approximately ten thousand inquiries were submitted to the Bureau during the year covered by this report. These inquiries came from physicians, individual laymen, governmental agencies, Better Business Bureaus, commercial organizations, newspapers, radio stations and high school and college students.

The number of inquiries received from physicians has gradually decreased within the last three or four years. Four thousand such inquiries were received by the Bureau in 1938, while there were only two thousand five hundred in 1941. It is presumed that the decrease in the number of inquiries received annually from physicians is due to the fact that, under the provisions of laws enacted within the last few years, active ingredients of products for which claims of therapeutic efficiency are made must be declared on labels, and thus it is no longer necessary for physicians to inquire as they formerly did with respect to the composition of such products.

There has been a constant increase in the number of inquiries received from teachers and students. In 1940 the number of such inquiries was more than twice the number received in the preceding year, and this level was maintained in 1941. The explanation seems to be that high schools and colleges throughout the country have developed "consumer studies" to a rather remarkable extent. In 1939 inquiries from students represented 12 per cent of the total number presented to the Bureau, whereas in 1941 such inquiries represented 27 per cent of the total. It is gratifying to note that the interest of students in high schools and colleges has been so greatly aroused and that the Bureau of Investigation is being given opportunity to contribute to the education of the younger groups of the population with respect to the dangers of fraud and quackery in medicine.

Inquiries from newspapers, magazines, government agencies and Better Business Bureaus have been constant in amount during the last several years. In numerous instances, questions submitted to the Bureau pertain to more than one subject. Those subjects about which most inquiries are received are so-called cures for cancer, epilepsy and diabetes, coal tar drugs, cathartics and products widely advertised as being effective in the treatment of colds. A relatively large number of inquiries pertain to the activities of individuals and groups who resort to the use of more or less sensational advertising methods.

OTHER ACTIVITIES

The Bureau of Investigation has prepared a considerable amount of material for publication in *THE JOURNAL*. Some three thousand of the Bureau's pamphlets were distributed during the year. Lantern slides and a film strip of available slides have been supplied for use for educational purposes by physicians, teachers and others.

The Director of the Bureau during the year delivered addresses before fourteen lay audiences and professional groups under the sponsorship of medical societies and of state or county auxiliaries of the Woman's Auxiliary to the American Medical Association.

The Bureau of Investigation has cooperated as fully as opportunity has offered with agencies of the federal government, including the Federal Trade Commission, the Food and Drug Administration and the Postoffice Department.

Summary

The Bureau of Investigation continued during 1941 to play its part in the educational activities of the American Medical Association.

Approximately ten thousand inquiries from physicians, laymen, governmental agencies, Better Business Bureaus, commercial organizations, newspapers, radio stations and high school and college students were submitted to the Bureau in 1941. The number of inquiries received from physicians has gradually decreased within the last few years, but there has been a constant increase in the number of inquiries received from teachers and students. The subjects about which inquiries were most numerous during the year were so-called cures for cancer, epilepsy and diabetes, coal tar drugs, cathartics and products widely advertised as being effective in the treatment of colds.

Approximately three thousand of the Bureau's pamphlets were distributed during the year, a considerable amount of material was prepared for publication in *The Journal*, and lantern slides and a film strip of available slides were supplied to physicians, teachers and others on request. The Director of the Bureau addressed a number of audiences during the year.

The Bureau of Investigation has cooperated at every opportunity with various agencies of the federal government.

Bureau of Exhibits

The activities of the Bureau of Exhibits during 1941 comprised the Scientific Exhibit at the annual session; exhibits from Association headquarters shown at various state medical meetings and other scientific organizations; exhibits for the public at state fairs, expositions and similar public gatherings, and motion pictures. The year 1941 marked the first time in a

decade when the Bureau was not preparing or maintaining an exhibit at a world's fair.

THE SCIENTIFIC EXHIBIT

The installation of the Scientific Exhibit at the Cleveland session in 1941 was the most attractive in many years. New booth equipment, a new color scheme and fluorescent lighting added materially to the attractiveness of the display, while the commodious hall allowed ample space for the free movement of visitors. Likewise the caliber of the exhibits presented, the energy and perseverance of the demonstrators and the enthusiasm of the visiting physicians attested the high place which the Scientific Exhibit has reached as an instrument in graduate medical education.

There were three hundred and ten signed applications for exhibit space at the Cleveland session, of which one hundred and sixty-nine were accepted. Sixteen sections of the Scientific Assembly were all represented, the largest number of exhibits presented by any one section being twenty-six and the smallest number five.

One of the features of the Scientific Exhibit was a group of exhibits on national defense and war medicine, which was popular as well as timely.

The special exhibit on fractures was carried on under the direction of the same committee as previously, of which Dr. Kellogg Speed, Chicago, was chairman. The special exhibit on lame backs, somewhat larger than in the previous year, was presented for the second time under the auspices of the same committee, of which Dr. Frank R. Ober, Boston, was chairman.

The so-called educational group of exhibits consisting of presentations shown in the names of various national organizations and government agencies was eliminated for the first time in many years. At the Cleveland session each exhibit in this group was shown in the name of the person who demonstrated the exhibit.

Motion pictures were eliminated from the booths of the exhibitors at the Cleveland session and were shown in motion picture theaters only. Six motion picture theaters were maintained simultaneously and continuously throughout the week, with chairmen to introduce physicians who wished to explain their pictures and professional operators to project the films. The pictures were shown once each day.

The Committee on Awards, of which Dr. Walter M. Simpson, Dayton, Ohio, was chairman, worked faithfully and well, spending long hours each day visiting the exhibits and deciding the awards. The number of awards given this year totaled forty: two gold medals, two silver medals, two bronze medals, twelve certificates of merit and three special mentions.

ASSOCIATION EXHIBITS

There are thirty-nine exhibits available for loan purposes, of which fifteen are serviceable primarily for medical societies and scientific groups, eighteen for fairs and expositions and other public gatherings and six for either group with minor variations on emphasis. During 1941 thirteen exhibits were discontinued and seven new exhibits added. Exhibit material was sent out on one hundred and twenty-one occasions, the total number of exhibits being two hundred and twenty-four, since in some instances more than one exhibit was sent. In two states, California and Nebraska, the exhibits were used at numerous county fairs under the auspices of the respective state medical associations, considerably increasing the number of showings mentioned. The medical group of exhibits was sent out on fifty occasions, while those for the public were sent out on seventy-one occasions. The exhibits were shown in thirty states and the District of Columbia.

In accordance with the resolution adopted by the House of Delegates at the New York session of the American Medical Association in 1940, there has been active cooperation between the Bureau of Exhibits and the various health museums over the country. Exhibit material has been lent on a temporary or a semipermanent basis during the year to the museums in Cleveland; Chicago; Toledo, Ohio; Grand Rapids, Mich.; Newark, N. J.; Pittsburgh; Madison, Wis., and New York City. At the Chicago Museum of Science and Industry and at the Cleveland Health Museum a question and answer service was main-

tained, the answers to the questions being sent out by mail from the Bureau of Health Education of the American Medical Association.

MOTION PICTURES

There are twenty-three motion pictures available for loan purposes from the American Medical Association. Two new pictures were added during the year. Films were sent out to thirty states and to the District of Columbia, Hawaii and Canada on two hundred and seven occasions. In many instances two or more pictures were sent to the same place. The pictures were often shown to several audiences before they were returned, considerably increasing the number of showings. Requests for information concerning motion pictures were numerous, and an endeavor was made to inform the inquirers where pictures on certain subjects could be obtained.

Summary

The Scientific Exhibit at the Cleveland session in 1941 was notable for its attractiveness and for the high caliber of the exhibits presented. There were one hundred and sixty-nine individual exhibits and two special exhibits on fractures and lame backs. Six motion picture theaters were in continuous operation.

The loan exhibits of the Association number thirty-nine. They were sent out on one hundred and twenty-one occasions, the total number of exhibits being two hundred and twenty-four, since more than one exhibit was sent to some places.

Museums have been the recipients of health exhibits on a temporary or semipermanent basis. Question and answer services are maintained at the Chicago Museum of Science and Industry and at the Cleveland Health Museum.

There are twenty-three motion pictures in the loan collection of the Association, which are in constant demand. They were sent out to thirty states and to the District of Columbia, Hawaii and Canada on two hundred and seven occasions. In many instances two or more pictures were sent to the same place. Hundreds of requests for information concerning motion pictures on particular subjects were received.

Medicine and the War

Every officer, council, bureau and department of the American Medical Association, indeed the entire personnel of the headquarters office, are participating in the war effort of the nation. The publications of the Association, particularly *THE JOURNAL*, *HYGEIA* and *WAR MEDICINE*, are devoting largely of their space to the contribution of medicine in the war.

COMMITTEE ON MEDICAL PREPAREDNESS AND PROCUREMENT AND ASSIGNMENT SERVICE

The Committee on Medical Preparedness of the American Medical Association met in Washington, D. C., Aug. 19 and 20, 1941 to consider the resolution adopted by the House of Delegates at the annual session in Cleveland relative to the establishment of a procurement and assignment agency, to be concerned with the provision of medical personnel for the Army, Navy, Public Health Service and other governmental agencies. The committee at that time considered also other problems of medical service, including the inventory of the medical profession, deferment of medical students, interns and residents, provision of personnel for Selective Service boards and rehabilitation. In association with the committee at that time were representatives of the office of the Federal Security Agency, the U. S. Public Health Service, the Health and Medical Committee, the Selective Service System, the surgeon generals of the Army and Navy, and representatives of the personnel divisions of the Army and Navy medical departments.

Following these preliminary considerations, the director of the Office of Defense Health and Welfare, Mr. Paul V. McNutt, called a meeting under the auspices of the Health and Medical Committee, of which Dr. Irvin Abell, chairman of the Committee on Medical Preparedness of the American Medical Association, is also chairman. The Health and Medical Committee, by executive order of the President, Sept. 3, 1941, advises the

director of the Office of Defense Health and Welfare regarding the health and medical aspects of national defense exclusive of medical research and assists in the coordination of health and medical activities affecting national defense. The director of the Office of Defense Health and Welfare is also authorized to appoint advisory committees and subcommittees with respect to particular aspects of health, welfare, nutrition, recreation and related activities.

On Oct. 22, 1941 the Health and Medical Committee called a conference of representatives of all government services with representatives of the Committee on Medical Preparedness of the American Medical Association and various other agencies to consider the action taken by the House of Delegates of the American Medical Association, to wit: "That the United States government be urged to plan and arrange immediately for the establishment of a central authority with representatives of the civilian medical profession, to be known as the Procurement and Assignment Agency for physicians for the Army, Navy and Public Health Service and for the civilian and industrial needs of the nation." At this time a commission was appointed which included the President of the American Medical Association and the Editor of *THE JOURNAL* among others. This commission recommended the establishment of a procurement and assignment service and outlined the procedure for its establishment. On Oct. 30, 1941 a letter from Mr. Paul V. McNutt, director of the Office of Defense Health and Welfare, to the President was approved by the President and constitutes the authority under which the Procurement and Assignment Service operates.

The chairman of the Directing Board of the Procurement and Assignment Service is the President of the American Medical Association, Dr. Frank H. Lahey. The establishment includes a consultant office in the headquarters of the American Medical Association under the supervision of Dr. R. G. Leland. It includes also nine corps area committees with their offices. The chairmen of these corps area committees have been selected in most instances from the membership of the Committee on Medical Preparedness of the American Medical Association. Officials of the Association are active also in the work of the advisory committees.

Following a conference held in Chicago, arrangements were made to supply to the National Roster of Scientific and Specialized Personnel copies of the punch card system developed in the headquarters of the American Medical Association covering the medical profession. A consultant committee to the National Roster includes Drs. Morris Fishbein, R. G. Leland and Olin West.

Following the declaration of war against Japan and Germany, an immediate expansion of the military-naval services was undertaken with increased demand for the enlistment of members of the medical profession. Publication in *THE JOURNAL* of the AMERICAN MEDICAL ASSOCIATION of two special enrolment blanks brought to the Procurement and Assignment Service the names of more than twenty-five thousand physicians who indicated that they would, when notified, apply at once to the Procurement and Assignment Service for commissioning in the Army. By the utilization of these twenty-five thousand replies the immediate needs of the Army and Navy Medical Departments for physicians have been satisfied. During the first week in April 1942 the new enrolment form and questionnaire prepared by the board of the Procurement and Assignment Service and by the National Roster of Scientific and Specialized Personnel was circulated to all the licensed physicians of the United States.

In the functioning of the Procurement and Assignment Service the county and state medical societies and corps area committees act to ascertain the essential character of the services done by physicians in various parts of the country and to advise the Procurement and Assignment Service and the Selective Service boards as to the necessity of such services. Through the consultant office in the headquarters office of the American Medical Association the information there available regarding individual physicians is also supplied to the Procurement and Assignment Service and to the personnel division of the medical departments of the Army and the Navy. The Division of Medical Sciences of the National Research Council through its con-

sultant committees has aided in the evaluation of the physicians who specialize with relation to appointments in the Army and Navy medical departments requiring specialistic service.

PHYSICIANS FOR BRITAIN

Early in 1941 the President of the United States requested a number of medical organizations, including the American Medical Association, to aid the American Red Cross in its effort to comply with the request of the British Red Cross for one thousand physicians to reinforce the British medical services, including the Royal Army Medical Corps and the Emergency Medical Service. The offices of the American Medical Association aided in extending this request to the medical profession and in informing the public about the work to be done. Through the lists available in the headquarters office of the American Medical Association, the names of all physicians under 35 years of age were supplied, and to each of those eligible was sent an application blank. When the United States entered the war in December 1941 this project was considered completed. Indeed, arrangements were made by the medical department of the British army to release to the American army those men who had been assigned to this service, the number being somewhat over one hundred. Twelve women physicians who had been sent to Great Britain are continuing their work in the British medical services.

THE SELECTIVE SERVICE

Up to February 1942 more than twenty-eight thousand physicians had enrolled with various phases of the work of the Selective Service. In the department of THE JOURNAL devoted to Medicine and the War, all official bulletins of the Selective Service System directed especially to the medical profession have been given circulation.

Special consideration has been given to the proposal for prehabilitation of registrants. Information has also been supplied relative to projects for rehabilitation.

At the meeting of the secretaries and editors of state medical societies, Brig. Gen. Lewis B. Hershey, director of the Selective Service System, expressed the appreciation of the Selective Service for the cooperation of the medical profession. He said "I do not possess control of the English language adequate to tell you what the work of anywhere from twenty thousand to fifty thousand of the medical profession of America has done in the last year in Selective Service. . . . I do believe you occupy a peculiar position in the minds of the people. . . . You still do have some of that combination that came from long ago when the medicine man was something a little more than a human being."

Officials of the American Medical Association, including the President, Dr. Frank H. Lahey, the Secretary and General Manager, Dr. Olin West, and the Editor, Dr. Morris Fishbein, attended a conference called by the Selective Service System to consider the possibility of a program for rehabilitation of rejected selectees. The views there expressed have been significant in guiding the development of this project. Eventually such rehabilitation was begun as an experiment in the states of Maryland and Virginia. The offices of the American Medical Association have been of service to the Selective Service System in the listing and evaluation of physicians who are cooperating in the rehabilitation program.

INFORMATIONAL SERVICES

The Library of the American Medical Association, in association with the Editorial Department, has made available to the Medical Department of the U. S. Army foreign and domestic medical periodicals, books and other informational material concerning the medical facilities and the health conditions of various sections of the world into which the Army and Navy of the American government may be sent.

Through the current medical literature department, under Dr. George Halperin, complete bibliographies and abstracts concerned especially with medical problems of aviation, chemical warfare, shock and similar subjects have been prepared. These have been supplied to the special committees of the Office of Scientific Research and Development and of the Division of Medical Sciences of the National Research Council for use in the work which they are conducting. Much of this abstract

material is also made available to the medical profession generally and particularly to the military services through WAR MEDICINE.

CIVILIAN DEFENSE

The offices of the American Medical Association have cooperated fully with the United States Office of Civilian Defense in the extension of information to the medical profession as to its participation. The special medical bulletins of the United States Office of Civilian Defense have been published in full in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Officials of the Association have on many occasions consulted with Dr. George Baehr, chief medical officer, and with other officials of the Office of Civilian Defense. By action of the Board of Trustees Miss Lois Stice, for several years news editor of publicity assistant in the Editorial Department, was lent to the Office of Civilian Defense to aid in medical extension and has now been associated with that work for almost a year. The offices of the Secretary of the Association have been utilized by the Office of Civilian Defense in special mailings of informational material directly to the officers of state and county medical societies for use by the Office of Civilian Defense in extending its work to the medical profession of the nation.

PERSONNEL OF THE HEADQUARTERS OFFICE

The personnel of the headquarters office of the Association has been rendering many services to governmental agencies in connection with the war effort:

Dr. Olin West, Secretary and General Manager of the American Medical Association, has acted as secretary of the Committee on Medical Preparedness of the American Medical Association, consultant to officials of the Selective Service System and the Office of Defense Health and Welfare, and member of consultant committee, National Roster of Scientific and Specialized Personnel.

Dr. Morris Fishbein, Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, has served as chairman of the Committee on Information, Division of Medical Sciences, National Research Council, consultant to the Medical Committee, Office of Scientific Research and Development, consultant to the Selective Service System and Office of Defense Health and Welfare, chairman of the Committee on Information, Procurement and Assignment Service, editor of WAR MEDICINE and vice chairman of the Medical Committee, Civilian Defense, City of Chicago.

The Bureau of Exhibits has been cooperating with various governmental agencies in the development of exhibits for demonstration at the Atlantic City session in 1942. The director of the Bureau, Dr. Thomas G. Hull, is a member of the Medical Advisory Committee of the Illinois State Council of Defense.

The Council on Industrial Health has been cooperating with the Subcommittee on Industrial Health and Medicine of the Health and Medical Committee in the Office of Defense Health and Welfare. Plans have been developed for coordination of various activities in the field of industrial health for the conservation of personnel, for the stimulation of essential research and for the correlation of regional, state and local agencies concerned with civilian defense and committees on industrial health of state and county medical societies. Information is being disseminated among industrial plants on organization for medical and other services required by sabotage, bombing or other catastrophes.

The Biographic Department and the Bureau of Investigation of the American Medical Association have been developing important information regarding physicians and other personnel in the medical services.

The Bureau of Legal Medicine and Legislation has served in an advisory capacity to several federal agencies with relation to the analysis of laws relating to medical licensure and the acceleration of medical education. A special statement has been developed regarding the civil rights of physicians when they enter military service. The Bureau has also conferred with the War Production Board with reference to priorities for medical equipment.

The Bureau of Health Education has contributed radio programs dealing specifically with medical service in industry

and civilian services for a nation at war. Other broadcasts have concerned nutrition and housing problems in war. Emphasis has been placed on the President's May Day proclamation calling for immunization against smallpox and diphtheria. A special outline and bibliography have been prepared on nutrition for the use of the Woman's Auxiliary in the promotion of classes in nutrition. The following pamphlets have been reprinted from *HYGEIA* and are being widely circulated as a part of the educational program:

Our Selectees Are Healthier, by Lieut. Col. A. C. Koontz.

Health at the Crossroads, by M. R. Kinde.

How Well Do You Know Your First Aid? by K. F. Wells.

The Council on Pharmacy and Chemistry has been of assistance to several agencies in conferences regarding the supply of drugs and in determining which drugs are of established therapeutic value. Several members of the Council have carried the work of the Council directly to some of the consultant committees of the National Research Council. Indeed, practically all the members of this council cooperate with federal agencies and coordinate the work of the Council with governmental projects.

The Council on Foods and Nutrition has also aided through its members in the work of various agencies of the Army and Navy and the National Research Council. The Council has cooperated in the development of recommended daily allowances of dietary essentials and gave its support to the National Nutrition Conference for Defense. Special reports have been issued on nutritionally improved or enriched flour and bread and on the indiscriminate administration of vitamins to workers in industry. Nine of the members of the Council are also members of the Food and Nutrition Board of the National Research Council. One of the members serves as head of the Specifications and Test Unit, Standards Section, of the Office of Price Administration in Washington. The Secretary of the Council, Dr. F. C. Bing, devotes time to service on the Subcommittee on Vegetables, Fats and Fruits and also on the Executive Committee of the Food and Nutrition Board of the National Research Council. He serves also as consultant to the Vitamin Division of the Food and Drug Administration and is on a Chicago committee on nutrition. Another member of the Council's staff, Dr. W. B. Bradley, is on the Victory Garden Committee of the Chicago area.

The Council on Physical Therapy has prepared a Handbook on Amputations and has cooperated with the Subcommittee on Physical Therapy of the National Research Council in the preparation of a Manual of Physical Therapy.

The Department of Press Relations of the headquarters office aids in the dissemination of information to both the medical profession and the public on the Procurement and Assignment Service for Physicians, Dentists and Veterinarians. The head of this department is also active on the publicity committee for the Emergency Medical Services of the Office of Civilian Defense in Chicago. A special edition of the *AMERICAN MEDICAL ASSOCIATION NEWS* containing abstracts of articles and announcements in *WAR MEDICINE* is developed by this department for each issue of *WAR MEDICINE*.

The Bureau of Medical Economics, which was designated to conduct a census of physicians for the Committee on Medical Preparedness, now has a complete alphabetical listing of 181,530 physicians, representing the original circularization of schedules to physicians of the United States and its dependencies. This process is a continuing one in which the names of deceased physicians are removed, the names of new physicians are added, the locations of physicians are changed and the qualifications are modified to represent the most recent and authentic information concerning the physician. The present activities in connection with the census of physicians and all the lists that have been prepared therefrom consist in clearing the names of physicians that are received from the Procurement and Assignment Service. Between Jan. 3 and March 23, 1942 inclusive the Bureau processed for the Procurement and Assignment Service the names of 7,132 physicians. In addition to the lists of names that have been processed, a large number of names have been submitted by telegraph for immediate clearance. The Bureau has also prepared lists of specialists for use in connection with the rehabilitation program admin-

istered by the Selective Service System. More than 5,619 names have been processed and placed on state lists for this purpose. The lists of physicians prepared for use in connection with the Selective Service System rehabilitation program must of necessity be incomplete at the present time, since as yet not all the specialists in the United States have been listed, and names must now be drawn from incomplete lists. The process of preparing these lists is further complicated by the fact that not all physicians on the listing sheets are rated, and it is necessary for the director to enter the rating according to the information that has been supplied. On some of the lists the rating was supplied by the committee that entered the information.

In cooperation with the United States Army, the United States Navy and the Selective Service System, the Council on Medical Education and Hospitals has assisted in securing deferment of medical students and premedical students who are matriculated in approved medical schools until completion of their undergraduate studies and one year of internship. Believing that the further education of a certain number of physicians is vital to the future welfare of the country, the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals have appointed a committee whose chief purpose is to formulate plans whereby a percentage of interns may be given an opportunity to continue their training in the special fields of medicine.

Every effort is being made by the Council in connection with the acceleration of the medical curriculum to speed the production of physicians. For this purpose a liaison committee of the Council and the Association of American Medical Colleges has been appointed. While the Council is of the opinion that the adoption of a program for an accelerated curriculum for approved medical schools is a decision which should be determined by each medical school, it stands ready to assist the individual schools in the reorganization of the undergraduate curriculum to maintain adequate standards of medical education.

In cooperation with the Procurement and Assignment Service the faculties of medical schools have been classified with respect to availability for medical service in national defense. At the request of the War Department, the Council requested all medical schools to advise faculty members considered necessary for the operation of a medical school that they should not serve as a member of an affiliated hospital unit.

In response to a telegram from Dr. George Baehr, medical officer, Office of Civilian Defense, dated Dec. 10, 1941, letters, together with bulletins on national defense, were sent to all hospitals having over twenty-five beds. This was done within twenty-four hours after Dr. Baehr's request was received.

The acute shortage of physical therapy aides reported by the Central Physical Therapy Board of the Office of the Surgeon General of the U. S. Army is being studied by the Council in an effort to determine the number available for service or in training. In this connection the Council has assisted in the establishment of concentrated courses to accelerate production of physical therapy personnel. Aside from the physical therapy studies, the Council has investigated the availability and made an inventory of technical personnel in all hospitals in the United States. This study covers laboratory and x-ray technicians, dietitians, pharmacists, medical record and other librarians, medical stenographers, occupational therapists, dental hygienists and social service workers.

In relation to civilian defense, the Council has studied the availability of blood and plasma banks in hospitals approved for intern training and residencies in specialties.

The Council on Medical Education and Hospitals is represented on the National Committee on Education and Defense, a committee sponsored by the American Council on Education and the National Education Association.

Summary

Every officer, council, bureau and department of the American Medical Association and every member of the headquarters personnel is participating in the war effort of the nation.

Committee on Medical Preparedness.—This committee met with representatives of various government agencies

in Washington, D. C., Aug. 19 and 20, 1941, to consider the resolution adopted by the House of Delegates at the Cleveland session relative to the establishment of an agency for the procurement and assignment of medical personnel for the Army, the Navy, the Public Health Service and other government services.

On Oct. 22, 1941 the Health and Medical Committee of the Federal Security Agency called a conference of representatives of all government services with representatives of the Committee on Medical Preparedness and various other agencies. At this meeting a commission was appointed which recommended an outline of procedure for the establishment of the Procurement and Assignment Service. The President of the United States on Oct. 30, 1941, authorized the establishment of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians under the Office of Defense Health and Welfare Services, of which Mr. Paul V. McNutt is director. The chairman of the directing board of the Procurement and Assignment Service is the President of the American Medical Association, Dr. Frank H. Lahey. The Service includes a consultant office in the headquarters of the American Medical Association under the direction of Dr. R. G. Leland, nine corps area committees and various advisory committees.

Arrangements have been made to supply the National Roster of Scientific and Specialized Personnel, cooperating with the Procurement and Assignment Service, with copies of the punch cards covering the medical profession that have been developed at Association headquarters.

Two special enrolment blanks recently published in The Journal brought to the Procurement and Assignment Service the names of more than twenty-five thousand physicians who indicated that, when notified, they would apply at once for commissions, and the immediate needs of the Army and Navy medical departments have thus been satisfied.

Physicians for Britain.—During 1941 the American Medical Association, at the request of the President of the United States, aided materially in extending to the medical profession the request of the British Red Cross, through the American Red Cross, for one thousand physicians to reinforce the British medical services. When the United States entered the war this project was considered completed, and arrangements were made by the medical department of the British army for the release of more than one hundred American physicians who had been assigned to this service. Twelve American women physicians are continuing their work in the British service.

Selective Service.—Up to February 1942 more than twenty-eight thousand physicians were enrolled in various phases of the work of the Selective Service System. Officials of the American Medical Association attended a conference called by the director of the Selective Service System to consider a possible program for the rehabilitation of rejected selectees. Experimental effort in this direction was begun in Maryland and Virginia.

Civilian Defense.—The American Medical Association has cooperated fully with the Office of Civilian Defense in the extension of information to the medical profession.

Headquarters Personnel.—The Secretary and General Manager of the Association, Dr. Olin West, the Editor of The Journal, Dr. Morris Fishbein, and the Director of the Bureau of Medical Economics, Dr. R. G. Leland, have personally rendered a great deal of service to governmental agencies in connection with the war effort.

The Bureau of Exhibits, the Council on Industrial Health, the Biographic Department, the Bureau of Investigation, the Bureau of Legal Medicine and Legislation, the Bureau of Health Education, the Council on Pharmacy and Chemistry, the Council on Foods and Nutrition, the Council on Physical Therapy, the Department of Press Relations, the Bureau of Medical Economics

and the Council on Medical Education and Hospitals have each cooperated in every possible manner with every government department and have contributed specifically and materially to the furtherance of the nation's war effort.

Committee on American Health Resorts

A meeting of the Committee on American Health Resorts held in January 1941 resulted in decisions to proceed with the preparation of rules for listing acceptable health resorts and the publication of these rules when approved by the Board of Trustees, the preparation of scientific articles to be published in THE JOURNAL and the gathering and compiling of information. An informal conference of members of the Committee was held at Cleveland during the American Medical Association meeting in June.

WORK OF THE COMMITTEE

The office work of the Committee is supervised by Dr. W. W. Bauer, Director of the Bureau of Health Education. During the first six months of 1941 this work consisted largely in the writing of follow-up letters to health resorts in an effort to get as high a percentage of returns as possible from the preliminary questionnaires sent out and in compiling and summarizing information.

Six hundred forty-five questionnaires were sent to an equal number of institutions believed to exist. Of these, two hundred and seventy-seven were returned mostly in a state of incompleteness necessitating much additional correspondence. In the case of two hundred and fifty-eight institutions to which questionnaires were sent, it was developed through various sources that they either had been closed or were not operating as health resorts or, for other reasons, should not be included in the list of institutions possibly eligible for inclusion in a register which might be compiled under the proposed rules of the Committee.

The following analysis concerning medical direction in health resorts has been made:

	Class 1*	Class 2†	Class 3‡
Medical direction (resident)...	32	2	3
Medical direction (nonresident)...	24	0	0
Physicians available...	34	1	1
The number of institutions which require a prescription from a physician or a bath permit...	14		

* Institutions which employ mineral water, mud or both for treatment purposes (these may also employ mineral water for therapeutic drinking in addition).

† Institutions which employ mineral waters for therapeutic drinking only.

‡ Institutions which use the Battle Creek system or a similar system plus climate and sunshine as natural resources—no mineral water, and so on.

RULES OF THE COMMITTEE

The following rules and explanatory matter have been adopted by the Committee and approved by the Board of Trustees:

Recognizing the value of those phases of medical treatment included under the general classification of health resort or spa treatment such as climate, thermal and mineral waters, sea water and peloids (muds) the House of Delegates of the American Medical Association in 1938 authorized the appointment of a Committee on American Health Resorts. This Committee was accordingly appointed by the Trustees.

This Committee first prepared a questionnaire which could be sent to known health resorts asking for information as to their natural therapeutic resources and domiciliary and recreational facilities and, more important, the medical facilities available and the medical supervision of the use of therapeutic facilities available.

A list of health resorts was then compiled from various sources including books, government publications, the records of the American Congress on Physical Therapy, tourist guides and miscellaneous sources.

Through an extensive survey by questionnaire and correspondence a comprehensive list was developed of health resorts in the United States including those with and without medical facilities.

The Committee next proceeded to establish and define certain minimum fundamental standards which would assure the safe and successful use of natural therapeutic resources according to established scientific procedure. These standards have been expressed in the rules, which are subject to modification as experience indicates.

The Committee now plans to offer an opportunity to American health resorts to apply for a listing which the Committee proposes to compile. This listing will include health resorts which comply with the rules of the Committee. Application blanks will be furnished on request addressed to the Committee on American Health Resorts, American Medical Association, 535 North Dearborn Street, Chicago.

On receipt of an application properly filled out the Committee will, with all possible promptness, cause inspection to be made of the applicant's premises and will make such other investigations as the Committee may deem advisable. A report will be compiled, submitted to the applicant and published. If the applicant is found to comply with all the

rules of the Committee, the name of the health resort will be included in the Committee's list during such time as compliance with the rules of the Committee continues.

When any modifications of the rules are deemed necessary, those resorts already listed under rules as previously adopted will be notified promptly and will be given reasonable opportunity to comply with the modified ruling or voluntarily to withdraw from the listing.

RULES

Object of Rules.—The following rules with such amendments as may be added from time to time have been adopted by the Committee on American Health Resorts of the American Medical Association with the primary object of identifying for the medical profession and the public those health resorts which are shown by investigation of their location, climate, personnel and management to merit recognition by the medical profession.

Definition.—A health resort is defined as "an institution which gives major attention to the use of the special climatic and other natural therapeutic resources including mineral waters, peloids, etc., with which it is endowed by reason of its location." While the use of the natural resources is the prime object or purpose of the institution, other remedies may be applied as an adjunct.

List.—American health resorts which are found by the Committee to conform to the letter and spirit of the following rules will, on application approved by the Committee, be placed on a list to be published by the Committee.

RULE 1 Application.—To be considered for inclusion in the Committee's list, formal application must be made to the Committee according to the following formula:

(a) Formal application for consideration should be written on stationery of the applying health resort, addressed to the Secretary of the Committee on American Health Resorts, American Medical Association, 535 North Dearborn Street, Chicago.

(b) This application should be accompanied by complete information on (1) ownership, (2) personnel, (3) equipment, (4) method of operation, (5) method of promotion.

(c) Eight copies each of all recent advertising, descriptive booklets, pamphlets, circulars, promotional form letters and any other promotional matter pertaining to the health value of the resort should be submitted.

(d) All correspondence with the secretary should be in duplicate.

RULE 2 Claims and Advertising.—The claims made for a resort must be acceptable to the Committee, and all advertising material must be presented with applications. A resort will not be listed or retained if the management makes unwarranted, exaggerated or misleading statements in any of its advertising.

RULE 3 Medical Supervision.—Medical supervision must meet with the approval of the Committee and must be of such character as to place proper safeguards about the patient to protect him from mistreatment or dangerous treatment. Institutions which permit attendants or technicians to alter or supplement a physician's prescription or to prescribe treatment without restrictions or medical supervision will not be listed. An institution applying for listing will be scrutinized most carefully as to the character of the safeguards placed about the patient by way of medical supervision and the efficiency and good faith with which the rules governing these needs are enforced.

RULE 4 Inspection.—An institution which makes application cannot be given formal consideration until it has been inspected by an inspector designated for the purpose by the Committee.

RULE 5 Removal from List.—If in the opinion of the Committee a listed institution fails to live up to the letter and spirit of these rules or engages in practices contrary to established scientific procedure, the Committee may remove the institution from the list.

RULE 6 Committee Decision Final.—In making application for inclusion in the Committee's list, the applicant agrees that final decision as to listing, nonlisting or subsequent removal shall rest with the Committee.

SCIENTIFIC PAPERS

Titles were chosen and authors invited to prepare a series of papers on health resorts and health resort therapy for publication in *THE JOURNAL*, and work on these papers is now going forward.

APPLICATION BLANKS

A supply of application blanks to be used by institutions making formal application for listing under the rules of the Committee has been printed and is on hand for distribution as soon as the rules of the Committee have been published.

The Committee on American Health Resorts is composed of Dr. Walter S. McClellan, Acting Chairman, Dr. Euclid M. Smith, Dr. M. B. Jarman, Dr. W. Paul Holbrook and Dr. Frank H. Krusen.

Committee to Study Air Conditioning

The Committee to Study Air Conditioning has as its chief function the continuous appraisal of developments and publications in the field of air conditioning as related to health and the interpretation to the medical profession of their significance. An attempt is made to limit the committee's activities to air conditioning in its strictest sense, but inevitably its work extends into the related fields of ventilation, air exhaust systems, aerial bacteriology, and so on.

During the period covered by this report the chief activity of this committee has been the compilation and digestion of all available records and reports on air conditioning and closely related topics for the five year period ended Jan. 1, 1941. Similar compilations for the year 1941 are now in progress. By classification this committee has available in abstract form extensive material related to all commoner aspects of air conditioning, including such items as ozone in air conditioning, infection in relation to air borne organisms, ventilation of air raid shelters, ventilation of mines, air conditioning of naval vessels and air conditioning of windowless structures. Although no policy exists at this time for ways and means for making such materials available to individual physicians or groups, it is the desire of the committee to cooperate with all physicians through the furnishing on request of whatever materials may be at hand on any specific topic associated with air conditioning.

From time to time the committee, as such or through its members as individuals, prepares timely material on air conditioning, as represented by the article on "The Importance of Clothing in Air Conditioning" by C. P. Yaglou and Anne Messer published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* in October 1941. Under some circumstances the committee will sponsor the publications of noncommittee members when it may be determined that the contents of such publications serve the purposes of the committee in the guidance of the medical profession in air conditioning developments and practices.

Respectfully submitted.

CAREY P. MCCORD, Chairman
WALTER M. SIMPSON.
C. P. YAGLOU.

Committee to Study the Relationship of Medicine and Law

In accordance with the provisions of the resolution submitted to the House of Delegates at the Cleveland session by Dr. W. G. Hippen, delegate from Massachusetts, and approved by the House of Delegates, a Committee to Study the Relationship of Medicine and Law has been appointed. The members of this committee are Dr. Alan R. Moritz, chairman, Boston; Dr. Harrison S. Martland, Newark, N. J.; Dr. E. R. Cunniffe, New York City, and Mr. J. W. Holloway Jr., Chicago.

This committee has held one meeting with members of the Committee on Medico-Legal Problems of the American Bar Association, and progress already has been made toward carrying out the intent of the resolution adopted by the House of Delegates.

Proposed Committee to Confer with Specialty Boards

The resolution submitted to the House of Delegates at the Cleveland session by Dr. L. G. Christian, delegate from Michigan, providing for the appointment of a committee to confer with specialty boards, has received consideration, first by the Executive Committee of the Board of Trustees and later by the Board as a whole.

In view of the nature of conditions created by the war emergencies and because the methods adopted by some of the specialty boards have undergone changes and apparently are subject to further change, the Board of Trustees believes it to be inexpedient to appoint a committee at this time for the purpose indicated in the resolution. It may be desirable, when conditions created by present emergencies have ceased to exist, that such a committee can be appointed with the expectation that more effective plans pertaining to the certification of specialists can be devised.

The United States of America versus the American Medical Association and the Medical Society of the District of Columbia

An appeal was taken in the case of the United States versus the American Medical Association and the Medical Society of the District of Columbia from the verdict rendered after trial before the District Court of the United States for the District of Columbia resulting in a conviction of the American Medical Association and the Medical Society of the District of Columbia. This appeal was heard by the United States Court of Appeals.

for the District of Columbia in February 1942 At the time of preparation of this report, no decision has been announced

Respectfully submitted

ARTHUR W BOOTH, Chairman
ERNEST E IRONS, Secretary.
R L SENSENICH
WILLIAM F BRAASCH
ROGER I LEE
ELMER L HENDERSON
RALPH A FENTON
JAMES R BLOSS
C W ROBERTS

ADDENDA TO REPORT OF BOARD OF TRUSTEES

Report of the Committee on Scientific Research for 1941

In 1941 twenty-four grants, amounting to \$7,550, were made in response to forty-two applications There were fewer applications and grants than usual, in both a fall of about 8 per cent as compared with 1940 The work under twenty-seven

Financial Statement for 1941

Balance, Jan 1 1941	\$ 3 051 60
Appropriation for 1941	13,700 00
Refund, grant 413	153 86
Refund, grant 463	50 00
Refund, grant 512	102 48
Refund, grant 531	41 37
Refund, grant 547	150 00
Refund, grant 563	8 99
Refund, grant 566	2 35
Refund, grant 570	96
Refund, grant 572	118 90
Refund, grant 589	84 96
Refund, grant 592	5 00
Refund, grant 602	371 34

\$17 841 81

GRANTS AND EXPENSES PAID IN 1941

Grant 599, William H Welker	\$350 00
Grant 600, W R Tweedy	125 00
Grant 601, Barnett Sure	600 00
Grant 602, Doran J Stephens	400 00
Grant 603, Norris J Heckel	250 00
Grant 604, Hans Popper	350 00
Grant 605, Harry G Day	400 00
Grant 606, Meyer M Harris	250 00
Grant 607, Fritz Levy	250 00
Grant 608, Everett I Evans	300 00
Grant 609, C E Cahn Bronner	300 00
Grant 610, H O Burdick	125 00
Grant 611, M R Todd	200 00
Grant 612, Roland K Meyer	500 00
Grant 613, Robert W Virtue	200 00
Grant 614, George Gomori	400 00
Grant 615, Frederick M Allen	500 00
Grant 616, Robert S Dow	250 00
Grant 617, Mary Juhn	500 00
Grant 618, H M Weaver	200 00
Grant 619, Paul Thomas Young	500 00
Grant 620, T T Chen	150 00
Grant 621, William M Cahill	175 00
Grant 622, Timothy Leary	75 00
Clerical expense	600 00
Committee expense	280 65
Printing	6 55

\$8 437 20

Balance on hand December 31 1941 \$9,404 61

previous grants is listed as completed, proper reports on results having been published or accepted for publication and full accounts made of the expenditures The articles now listed do not necessarily cover all the results of the research designated as completed Additional results may be published long after a grant has been closed on the records of the committee The work under forty-five grants prior to 1941 is incomplete, in most cases active work is in progress and in many cases reports have been published, while in other cases final publication is under way Two grants have been closed without any published record of the work, in 1 case on account of technical difficulties, in the other case because the grantee died

During the year unexpended balances of twelve grants, in all \$1,090.21, have been refunded

The financial summary for 1941 is presented, also brief accounts of the grants closed during the year, of the pending grants from previous years and a list of the grants made in 1941

Respectfully submitted

COMMITTEE ON SCIENTIFIC RESEARCH OF THE AMERICAN MEDICAL ASSOCIATION

LUDWIG HEKTOEN, Chicago, Chairman
Term expires, 1946

MARTIN H FISCHER, Cincinnati
Term expires, 1945

N W JONES, Portland, Ore
Term expires, 1944

JOHN J MORTON, Rochester, N Y
Term expires, 1943

E W GOODPASTURE, Nashville, Tenn
Term expires, 1942

GRANTS OF COMMITTEE ON SCIENTIFIC RESEARCH

NEW GRANTS—1941

Grant 599 William H Welker, University of Illinois College of Medicine, \$350, water soluble proteins

Grant 600 W R Tweedy, Loyola University School of Medicine, Chicago, \$125, effect of magnesium deficient diet on serum phosphatase activity in albino rat

Grant 601 Barnett Sure, Agricultural Experimental Station, Fayetteville, Ark., \$600 new factor in vitamin B complex essential for reproduction and lactation

Grant 602 Doran J Stephens, Strong Memorial Hospital, Rochester, N Y., \$400, effect of undernutrition of guinea pig on thyroid and ovary

Grant 603 Norris J Heckel, Rush Medical College, Chicago \$250, effect of sex hormones on seminal fluid

Grant 604 Hans Popper, Cook County Graduate School of Medicine, Chicago, \$350, study of vitamin A and lipoids by fluorescence microscopy

Grant 605 Harry G Day, Indiana University, \$400, physiologic significance of zinc

Grant 606 Meyer M Harris, Psychiatric Institute New York, \$250, food factors in muscular disease

Grant 607 Fritz Levy, Davis Memorial Hospital, Elkins W Va., \$250, study of marrow cells

Grant 608 Everett I Evans, Medical College of Virginia, \$500, problems in surgical shock

Grant 609 C E Cahn Bronner, University of Illinois College of Medicine, \$300, bacterial metabolism

Grant 610 H O Burdick Alfred University, Alfred, N Y., \$125, the effect of desoxycorticosterone acetate on pregnancy

Grant 611 M R Todd University of Oregon Medical School \$200, the physiologic effects of canine distemper vaccine

Grant 612 Roland K Meyer, University of Wisconsin \$500 anti hormones

Grant 613 Robert W Virtue, University of Denver, \$200, formation of cholic acid

Grant 614 George Gomori, University of Chicago \$400, enzymes in tissue sections

Grant 615 Frederick M Allen, New York Medical College \$500, reduced temperatures in surgery

Grant 616 Robert S Dow, University of Oregon Medical School, \$250 effects of clotting in cerebral veins

Grant 617 Mary Juhn University of Maryland College of Medicine, \$500, tests of applicability of feather germ reaction to tumor diagnosis

Grant 618 H M Weaver, Wayne University College of Medicine, \$200, pain on distention of the stomach

Grant 619 Paul Thomas Young University of Illinois, \$500, appetites and food preferences in the rat

Grant 620 T T Chen University of California, \$150, illustrations of nutritional parasites

Grant 621 William M Cahill Wayne University College of Medicine, \$175 self selection of food in relation to tumor growth

Grant 622 Timothy Leary Medical Examiner's Office Boston \$75, cost of extra illustrations for article on atherosclerosis Arch Path 32 507 1941

STATE OF WORK UNDER PREVIOUS GRANTS

1 COMPLETED DURING THE YEAR

Grant 410 1936 H E Eggers University of Nebraska, \$200 effect of tetramethylammonium gluconate on human cancer Eggers H E On Specific Chemotherapy for Cancer, accepted for publication by the Nebraska State Medical Journal

Grant 413, 1936 Philip Levine, Newark Beth Israel Hospital, Newark, N J \$350 bacteriophage action in the dysentery group (refund \$153 86) Levine Philip and Perlstein David Phage Specific Heat Labile Factors in B Dysentery Sonne Proc Soc Exper Biol & Med 36: 295 1937

2 INCOMPLETE—WORK IN PROGRESS

- Grant 254, 1932 J Lisle Williams, Rush Medical College, Chicago, \$200, decreased dextrose tolerance in acute infectious diseases
- Grant 310, 1934 Lay Martin, Johns Hopkins University, \$150, gastric juice See grant 462, 1937
- Grant 355, 1935 Royall M Calder, San Antonio, Texas, \$150, mechanism of pneumococcal inflammation
- Grant 441, 1937 Edward S West and G E Burget, University of Oregon Medical School \$350, diuretic action and chemical metabolism of sorbitol Todd, W R, Myers, J, and West, E S On the Metabolism of Sorbitol and Mannitol, *J Biol Chem* 127: 275, 1939
- Grant 445, 1937 Paul M Levin, Johns Hopkins University, \$250, cerebral efferent tracts in primates Levin, P M A Nervous Structure in the Pineal Body of the Monkey, *J Comp Neurol* 68: 405, 1938 Levin, P M, and Bradford, F K The Exact Origin of the Corticospinal Tract in the Monkey, *ibid* 68: 411, 1938
- Grant 462, 1937 Lay Martin, Johns Hopkins University, \$200, gastric juice See grant 310, 1934
- Grant 474, 1937 Marion Fay, Woman's Medical College of Pennsylvania, \$275, biochemistry of strontium See grant 552, 1939
- Grant 479, 1937 Tracy J Putnam, Boston City Hospital, \$200, injuries to the cervical portion of the cord
- Grant 480, 1937 Amy L Daniels, State University of Iowa, \$250, relation of fluorine to physiologic function
- Grant 481, 1937 Warren O Nelson, Wayne University College of Medicine, \$200, synthetic androgenic substances
- Grant 503, 1938 R C Robb, Syracuse University College of Medicine, \$800, diseases in twins
- Grant 504, 1938 Wallace M Yater, Georgetown University Medical School, \$500, histopathology of "bundle branch" block
- Grant 510, 1938 Erma A Smith, Iowa State College, \$150, influence of various substances on gastrointestinal motility Smith, Erma A, and Penrod, K E Gastrointestinal Motility in the Albino Rat After Administration of Amphetamine Sulfate, *Proc Soc Exper Biol & Med* 47: 418, 1941
- Grant 518, 1938 Harold D West, Meharry Medical College, \$100, synthesis of *dl* threonine See grant 559, 1939
- Grant 522, 1938 Ludwig A Emge, Stanford University School of Medicine, \$500, relation of sex hormones to tumor growth
- Grant 527, 1938 Alexander Levy, University of Oregon Medical School, \$300, occlusion of the coronary arteries See grant 577, 1940
- Grant 532, 1939 Walter Schiller, Cook County Hospital, Chicago \$200, ovarian tumors Schiller, Walter Liver Cell Fat Necrosis Caused by Pancreatic Reflux, *Surg, Gynec & Obst* 72: 70, 1941
- Grant 533, 1939 Hardy A Kemp and W M Fisher, Baylor University, \$500, venom of southern and southwestern scorpions
- Grant 536, 1939 Catharine Macfarlane, Woman's Medical College of Pennsylvania, \$1,900, value of periodic pelvic examination in detecting cancer of the uterus See grant 494, 1938 Macfarlane, Catharine, Fetterman, Faith S, and Sturgis, Margaret C Report of an Experiment in the Control of Cancer of the Uterus, *Quart Rev*, New York City Cancer Committee, 1941 Macfarlane, Catharine Progress Report on Experiment in Control of Cancer of the Uterus, *Connecticut State M J* 5: 814, 1941 Macfarlane, Catharine Precancerous Lesions of Uterine Cervix, *in Wpomon's J*, July 1941
- Grant 539, 1939 Albert V Hardy, Columbia University, \$500 Shigelli dysenteriae Hardy, A V The Mouse Mucosa Test in the Study of Shigelli, to be published
- Grant 541, 1939 Henry Laurens, Tulane University, \$350, lowering of arterial pressure by carbon arc radiation See grant 498, 1938 Laurens, Henry, and Graham, J S The Influence of the Pressure Lowering Effect of Carbon Arc Radiation, *M Rec* 154: 146, 1941
- Grant 542, 1939 Kendall B Corbin, University of Tennessee, \$200, alterations in the hip after deaeration
- Grant 552, 1939 Marion Fay, Woman's Medical College of Pennsylvania, \$250, biochemistry of strontium See grant 474, 1937
- Grant 557, 1939 W D Armstrong, University of Minnesota, \$500, calcification of bone in vitro
- Grant 559, 1939 Harold D West, Meharry Medical College, \$50, synthesis of *dl* threonine See grant 518, 1938
- Grant 560, 1939 B S Kline and H P Lankelma Western Reserve University, \$500, chemical study of antigens Wellman, J W, and Lankelma, H P Purification of the Antigen of Syphilis, *Pen Dis Inform* 22: 12, 1941
- Grant 562, 1939 Joseph H Roc, George Washington University, \$350 vitamin C requirements of man Kuecher, Carl A, and Roc, J H Determination of Ascorbic Acid in Whole Blood *Proc Soc Exper Biol & Med* 47: 467, 1941 Roc, J H, Hall, J M, and Dyer, H M Relation of Nutrition to Gastric Function II The Effect of Vitamin C Deficiency *Am J Digest Dis* 8: 261, 1941
- Grant 567, 1940 Armand J Quick, Marquette University, \$275, conversion of prothrombin to thrombin Quick, A J Prothrombin Concentration of the Blood in Various Species, *Am J Physiol* 132: 239, 1941 Prothrombin Level of Blood After Intramuscular Injection of Sodium Citrate, *Proc Soc Exper Biol & Med* 47: 1, 1941
- Grant 570, 1940 William H Sweet, University of Chicago \$300, course of nerve fiber tracts of the temporal lobe
- Grant 571, 1940 Joseph T King, University of Minnesota, \$280, autogenous effect of tissues on the action of sulfanilamide
- Grant 574, 1940 A G Eaton Louisiana State University, \$100 absorption and metabolism of amino acids Eaton A G, and Doty, J R The Heat Production and Blood and Urine Constituents After Administration of L(-) Histidine to the Dog, *J Nutrition* 21: 25, 1941

- Grant 576, 1940 Edward S West, University of Oregon Medical School \$250, solution of vesical calculi
- Grant 577, 1940 Alexander H Levy, University of Oregon Medical School, \$200, collateral circulation for coronary occlusion See grant 527, 1938
- Grant 579, 1940 Harry C Rolnick, Michael Reese Hospital, Chicago \$200, effect of trauma on the response of the kidney to sudden blockage
- Grant 582, 1940 Charles W Greene, Stanford University, \$500, physiology of the coronary system in monkeys
- Grant 583, 1940 Ulrich Friedemann, Jewish Hospital of Brooklyn, \$300, genesis of tetanus Friedemann, Ulrich; Hollander, A, and Tarlov, I M Investigations of the Pathogenesis of Tetanus III, *J Immunol* 40: 325, 1941
- Grant 584, 1940 Oscar V Batson, University of Pennsylvania \$200, nystagmus
- Grant 585, 1940 Howard Curl, University of Tennessee, \$400 roentgenologic study of the normal gallbladder
- Grant 590, 1940 David Polowe, Paterson, N J, \$150, pancreatic function test See grant 597, 1940
- Grant 591, 1940 Percival Bailey, University of Illinois \$500 effects of electrolytic lesions in the periaqueductal gray matter of the Macaca monkey
- Grant 593, 1940 A M Lissek, Medical College of the State of South Carolina, \$300, origin of the pyramidal tract in the monkey The Effect of Pre and Postcentral Cortical Ablations on the Fibers of the Pyramids in Monkeys, *J Nert & Ment Dis*, to be published
- Grant 594, 1940 I L Chaikoff, University of California \$350, phospholipid metabolism and blood regeneration as measured by radio active phosphorus
- Grant 595, 1940 Arthur C Allen, Mount Sinai Hospital, New York, \$250, effect of chemicals on vegetations of experimental endocarditis
- Grant 596, 1940 Israel Davidsohn, Mount Sinai Hospital, Chicago, \$400, bacteriogenic hemagglutination
- Grant 597, 1940 David Polowe, Paterson, N J, \$100, pancreatic function test See grant 590, 1940

3 WORK STOPPED, NO RESULT PUBLISHED

- Grant 547, 1939 Max T Schmitker, Toledo Hospital, Toledo Ohio, \$300, Berger rhythm determinations following cerebral trauma (refund, \$150) The work was stopped for the time being on account of technical difficulties
- Grant 602, 1941 Doran J Stephens, University of Rochester, \$400, changes in the thyroid gland of undernourished guinea pigs (refund, \$371.34) The grantee died on March 19 1941 See grant 575, 1940

Report of Committee on Therapeutic Research

The Committee on Therapeutic Research, a standing committee of the Council on Pharmacy and Chemistry, encourages scientific investigations in the field of therapeutics by providing funds for the prosecution of necessary research

During the year 1941 the committee issued thirty new grants A detailed list of these grants, a list of publications during 1941, and a list of unexpired grants made before Jan 1, 1941 are included in this report

The following is a list of the investigations conducted with the assistance of grants made by the Committee on Therapeutic Research, reports of which were published during 1941.

- Optimal NaCl Concentration for Oral Saline Diuresis, Julius M Coon, R O Noojin and Carl Pfeiffer *Am J Physiol* 134: 723 (Nov.) 1941
- An Experimentally Derived Method for Determining the Degree of Infection in Avian Malaria, Harry Beckman *Am J Trop Med* 21: 151 (Jan.) 1941
- The Cause of Death in Experimental Anuria, Hebbel E Hoff, Paul K Smith and Alexander W Winkler *J Clin Investigation* 20: 607 (Nov.) 1941
- Toxicity of Potassium in Adrenalectomized Dogs, A W Winkler, H I Hoff and P K Smith *Am J Physiol* 133: 494 (June) 1941
- The Cause of Death in Experimental Anuria, H E Hoff, P K Smith and A W Winkler *Am J Physiol* 133: 331 (June) 1941
- Recovery of Fatigued Muscle following Intravenous Injection of Potassium Chloride, Hebbel E Hoff, Alexander W Winkler and Paul K Smith *Am J Physiol* 131: 615 (Jan.) 1941
- The Toxicity of Orally Administered Potassium Salts in Renal Insufficiency, A W Winkler, H E Hoff and P K Smith *J Clin Investigation* 20: 119 (March) 1941
- Lactogenic Hormone: Extraction and Assay of Lactogenic Hormone in Postpartum Urine, Joseph Meites and C W Turner *J Clin Endocrinol* 1: 918 (Nov.) 1941
- Does Pregnancy Suppress the Lactogenic Hormone of the Pituitary? C W Turner and Joseph Meites *Endocrinology* 20: 165 (Aug.) 1941
- Relation of Size of Litter to AP Lactogen Content of Nursing Rabbits, J Meites, A J Bergman and C W Turner *Proc Soc Exper Biol & Med* 46: 670, 1941
- Comparison of Assay Methods Using International Standard Lactogen, J Meites, A J Bergman and C W Turner *Endocrinology* 28: 707 (May) 1941
- The Reliability of the Cobalt Isopropylamine Color Reaction for Amniol The Evaluation of Chromogenic Substances in Urine, R I Krause and Richard F Riley *J Pharmacol & Exper Therap* 71: 287 (March) 1941

- Blood Sugar and Liver Glycogen II Recovery After Single and Repeated Doses of Sulfonamide Drugs, Roberta Hafkesbrung, Esther M Greisheimer and Grace E Wertenberger *Medical Times*, November 1941
- III Blood pH and the Sulfonamides, Grace E Wertenberger *Medical Times*, November 1941
- NaCl and Peritoneal Absorption and Renal Excretion of Glucose in Normal and Diabetic Rats, George Sayers and James M Orten *Proc Soc Exper Biol & Med* 46: 287, 1941
- The Electrocardiogram in Acute Emetine Intoxication, Linn J Boyd and David Scherf *J Pharmacol & Exper Therap* 71: 362 (April) 1941
- Factors Influencing the Conjugation of Sulfapyridine, B K Harned and V V Cole *J Biol Chem* 140: 111 (July) 1941
- The Relative Responses of the Dorsal Metacarpal Digital and Terminal Skin Arteries of the Hand in Vasoconstrictor Reflexes, Alrick B Hertzman *Am J Physiol* 134: 59 (Aug) 1941
- Use of Colchicine in Detecting Hormonal Effects on Vaginal Epithelium of Menstruating and Castrate Women Ephraim Shorr and Eugene J Cohen *Proc Soc Exper Biol & Med* 46: 330, 1941
- The Effect of Histamine on the Pulmonary Blood Pressure of Various Animals With and Without Anesthesia, R A Woodbury and W F Hamilton *J Pharmacol & Exper Therap* 71: 293 (March) 1941
- The Effect of Convulsive Doses of Metrazol on Blood Pressure As Employed Therapeutically, During Spinal Anesthesia and During Asthenia, from Curare, R A Woodbury, H M Cleckley, Perry P Volpito and W F Hamilton *Am J Physiol* 133: 498 (June) 1941
- The Effect of Metrazol on the Blood Pressure of Man and Dog, R A Woodbury, W F Hamilton, H M Cleckley and Perry P Volpito *J Pharmacol & Exper Therap* 73: 431 (Dec) 1941
- Effect of Pentothal Sodium on Urine Output Under Various Experimental Conditions Herbert Silvette *J Pharmacol & Exper Therap* 72: 37 (May) 1941
- Acquired Tolerance to Small Doses of Postprandial Extract, Herbert Silvette and C N Psimas *Am J Physiol* 133: 447 (June) 1941
- The Effect of Various Agents on Blood Coagulation Time in Dogs, J A Richardson, F C Hays and R P Walton *J Pharmacol & Exper Therap* 73: 146 (Oct) 1941
- Recovery After Sulfonamide Drugs, Roberta Hafkesbrung and Esther M Greisheimer *Am J Physiol* 133: 310 (June) 1941
- pH Changes in the Blood Following Sulfapyridine and Sulfathiazole Administration, Grace E Wertenberger *Am J Physiol* 133: 488 (June) 1941
- A Classification of the Causes of Hypoleydigism, Fuller Albright, Ann P Forbes, Russell Fraser, Bretney Miller and Edward C Reifenstein Jr *Am J Physicians* 56: 43, 1941
- A New Microrespirometer for Nerve, P W Davies and Frank Brink Jr *Am J Physiol* 133: 257 (June) 1941
- Chemical Control of Respiration and Activity in Peripheral Nerve D W Bronk, Frank Brink Jr and P W Davies *Am J Physiol* 133: 224 (June) 1941
- Chemical Initiation of Rhythmic Local Responses in Nerve Preceding Trains of Propagated Impulses Frank Brink Jr and D W Bronk *Am J Physiol* 133: 222 (June) 1941
- The Ionic Permeability (Electrical Conductance) of the Sensitized Nictitating Membrane of the Cat, Rose Marrazzi and Amedeo S Marrazzi *Am J Physiol* 133: 377 (June) 1941
- Correlation Between Structure and the Ratio of Inhibitory to Pressor Activity of Sympathomimetic Amines, Amedeo S Marrazzi *J Pharmacol & Exper Therap* 72: 28 (May) 1941
- Coronary Reflex Dilatations Accompanying Contractions of Voluntary Muscles, Charles W Greene *Am J Physiol* 132: 321 (March) 1941
- Clinical and Experimental Studies on Paraldehyde, Meyer Bodansky Julius Luther Jenkins Harry Levine and Albert Joseph Gilbert *Anesthesiology* 2: 20 (Jan) 1941
- Resistance to Slowly Increasing Doses of Sodium Pentobarbital in the White Rat Duration of Higher Tolerance After Parturition and Effects of Age, Sex, Castration and Administration of Testosterone Propionate Harald G O Holck and Donald R Mathieson *Am J Physiol* 133: 332 (June) 1941
- Mammary Growth in Hypophysectomized Male Mice Receiving Estrogen and Prolactin, W U Gardner and Abraham White *Proc Soc Exper Biol & Med* 48: 590, 1941
- The Absorption and Fate of Free Citric Acid in the Rat, Carl A Kuether and Arthur H Smith *J Biol Chem* 137: 647 (Feb) 1941
- Effects of Estrone and Progesterone on Male Rabbit Mammary Glands I Varying Doses of Progesterone, William R Lyons and Daniel A McGinty *Proc Soc Exper Biol & Med* 48: 83, 1941
- Effects of Estrone and Progesterone on Male Rabbit Mammary Glands II Varying Doses of Estrone, George Scharf and William R Lyons *Proc Soc Exper Biol & Med* 48: 83, 1941
- Mammalian and Avian Assays of Hypophyseal Lactogenic Preparations William R Lyons *Endocrinology* 28: 161 (Feb) 1941
- Tissue Hydration During Morphine Addiction and Withdrawal in Rats on Low Calcium Diet and on High Calcium Diet with Parathyroid Hormone Injections, Lawrence E Detrick and C H Thienes *Arch internat de pharmacodyn et de therap* 66: 130 (July 31) 1941
- Cardiac Output in Coronary Occlusion Studied by the Wezler Boeger Physical Method, Arthur Grishman and Arthur M Master *Proc Soc Exper Biol & Med* 48: 207, 1941
- Blood Sugar and Liver Glycogen After Single Doses of Sulfanilamide Sodium Sulfapyridine and Sodium Sulfathiazole Esther M Greisheimer Roberta Hafkesbrung and Hulda Magalhães *Medical Times* 69: 170 (April) 1941
- Quantitative Effects of Implantation of Cattle Anterior Pituitary Powder on Gonads of Immature Rat, Robert H Shuler *Proc Soc Exper Biol & Med* 46: 537, 1941
- The Clinical Pathological Correlation of Neurosyphilis, Hyman S Rubinstein *Urol & Cutan Rv* 45: 255 (April) 1941
- Bromine and the Thyroid, Emil J Baumann, David B Sprinson and David Marine *Endocrinology* 28: 793 (May) 1941
- The Effects of Nitrites and Xanthines on Coronary Inflow and Blood Pressure in Anesthetized Dogs, Norman H Boyer and Harold D Green *Am Heart J* 21: 199 (Feb) 1941
- The Effect of Sodium Nitrite on the Emptying Time of the Normal Human Stomach, Clark K Sleeth and Edward J Van Lier *Arch internat de pharmacodyn et de therap* 65: 5 (Jan) 15) 1941
- The Effect of Testosterone Propionate on the Rat Testis H S Rubinstein and A A Kurland *Endocrinology* 28: 495 (March) 1941
- Further Study of Central Stimulation from Sympathomimetic Amines, J W Schulte, E C Reif J A Bucher Jr, W S Lawrence and M I Tainter *J Pharmacol & Exper Therap* 71: 62 (Jan) 1941
- The Mechanics of Gastric Evacuation J M Werle, D A Brody, E W Ligon Jr, M R Read and J P Quigley *Am J Physiol* 131: 606 (Jan) 1941
- Ascorbic Acid and Arspenamine Dermatitis Frank M McDonald and Herbert H Johnson *Arch Dermat & Syph* 43: 682 (April) 1941
- Studies on the Inactivation of Diphtheria Toxin by Vitamin C (Ascorbic Acid) Claus W Jungeblut *J Infect Dis* 69: 70 (July Aug) 1941
- Effect of Sulfapyridine on Staphylococcus Toxin R H Rigdon, Anne Haynes and Alys Lipscomb *J Lab & Clin Med* 26: 1111 (April) 1941
- Serum Therapy of Tetanus, Ralph Spaeth *Am J Dis Child* 61: 1146 (June) 1941
- Estrin Potency and Basal Metabolism Mary E Collett Faith W Reed Lebelbe Isaac Sylvia Rouse and Eleanor Yeakel *Am J Obst Gynec* 42: 93 (July) 1941
- Acute Fatal Insulin Poisoning Eugene L Jackson *J Pharmacol & Exper Therap* 72: 21 (May) 1941
- The Effects of Benzedrine Coramine Metrazol and Picrotoxin on Body Temperature and Gaseous Metabolism in Rabbits Depressed by Alcohol Harold W Werner *J Pharmacol & Exper Therap* 72: 45 (May) 1941
- The following grants were issued before Jan 1, 1941. In some cases the grant has expired and an unexpended balance remains, or the work is not yet completed or not yet published
- Grant 164 E L Jackson associate professor of pharmacology, Emory University School of Medicine \$200, to investigate the antagonism between sodium barbital and insulin.
- Grant 221 John G Reinhold, Department of Public Health Philadelphia General Hospital, \$250, to investigate the action of aminoacetic acid (glycine) in progressive muscular dystrophy
- Grant 232 George R Cowgill, associate professor of physiologic chemistry, Yale University School of Medicine, \$250, to investigate the heart in vitamin B deficiency
- Grant 238 Roy R Kracke, professor of pathology, Emory University School of Medicine \$250, to investigate the effect of the oxidation products of aminopyrine and related drugs on the leukocyte counts of rabbits
- Grant 248 Fred C Koch chairman of the Department of Physiological Chemistry and Pharmacology, University of Chicago, \$250 to investigate the male sex hormone
- Grant 263 H A Shoemaker associate professor of biochemistry and pharmacology, C E Clymer, professor of clinical surgery and Henry H Turner, University of Oklahoma School of Medicine, \$150, to investigate the blood cholesterol and iodine value in thyroid disease and their alteration by treatment
- Grant 264 Detlev W Bronk, Johnson professor of biophysics University of Pennsylvania School of Medicine \$200, to investigate the action of various drugs on the autonomic centers
- Grant 280 John P Peters professor of medicine, Yale University School of Medicine \$200 to investigate by means of intravenous pyelography the state of ureters and kidneys in a large series of patients after delivery and subsidence of acute signs of toxemia
- Grant 297 Melvin Dresbach, Harvard University School of Medicine, \$250, to investigate the emetic effect of some of the digitalis bodies
- Grant 305 Beverly Douglas, assistant dean and associate professor of Surgery, Vanderbilt University School of Medicine, \$250, to investigate the pneumatic (transparent rubber jacket) system of treating extensive wounds
- Grant 306 Edwards A Park professor of pediatrics Johns Hopkins University School of Medicine \$75, to investigate rickets in the rat and the effect of solution of parathyroid on the circulation of the bone
- Grant 311 Clarence P Berg assistant professor of biochemistry State University of Iowa, \$250 to investigate amino acids
- Grant 314 F C Koch, chairman, Department of Physiological Chemistry and Pharmacology, University of Chicago \$250, to investigate provitamin D
- Grant 333 Owen S Gibbs, former chief of Pharmacological Division University of Tennessee College of Medicine, \$180, to investigate the toxicity of morphine and scopolamine on rats
- Grant 355 Peter A Knoefel associate professor of pharmacology University of Louisville School of Medicine, \$150 to investigate the action of the amines, of the epinephrine series and of related substances on the central nervous system
- Grant 356 John B Lugen, research associate in medicine, University of California Medical School, \$150 to investigate the potassium and sodium ions in the blood of asthmatic patients and in anxiety states
- Grant 362 James M Orten, assistant professor of physiologic chemistry Wayne University College of Medicine, \$150, to investigate the effect of copper and certain other inorganic salts on the hypoglycemic activity of insulin
- Grant 367 Simon Benson former dean of pharmacy, Ferris Institute \$100 to investigate the therapeutic effects of skin counterirritants
- Grant 370 Harald G O Holck associate professor of pharmacology University of Nebraska College of Pharmacy, \$250, to investigate the possible effect of aging on the strength of digitalis preparations

Grant 375: Joseph Seifter, Department of Pharmacology, Western Reserve University School of Medicine, \$250, to investigate the pharmacology of metal alkyls.

Grant 376: R. W. Gerard, professor of physiology, the University of Chicago, \$200, to investigate the therapeutic effect of pyocyanin in schizophrenia.

Grant 391: A. R. McIntyre, professor of physiology and pharmacology, the University of Nebraska College of Medicine, \$100, to investigate ouabain and cardiac muscle and metabolism.

Grant 392: Arthur H. Smith, chairman of the Department of Physiological Chemistry, Wayne University College of Medicine, \$200, to investigate the rate of absorption of citric acid and citrates from the intestine, and the relative significance of these compounds as precursors of liver glycogen.

Grant 393: Arnold De M. Welch, formerly of the Department of Pharmacology, Washington University School of Medicine, \$300, to investigate the lipotropic activity of choline, betaine and their derivatives.

Grant 395: R. W. Whitehead, professor of physiology and pharmacology, University of Colorado School of Medicine and Hospitals, \$150, to investigate the influence of electrolytes in anaphylaxis.

Grant 403: Erwin E. Nelson, professor of pharmacology, Tulane University School of Medicine, \$100, to investigate pituitary extracts.

Grant 404: Carl Pfeiffer, Department of Pharmacology, Wayne University College of Medicine, \$300, to investigate caffeine withdrawal headaches.

Grant 405: A. C. Ivy, Department of Physiology, Northwestern University Medical School, \$225, to investigate the effect of gastrectomy on the monkey.

Grant 406: John C. Krantz Jr., professor of pharmacology, University of Maryland, \$250, to investigate the action of the nitrites.

Grant 408: Ephraim Shorr, assistant professor of medicine, Cornell University Medical College, \$300, to investigate the effect of progesterone on the vaginal smear.

Grant 409: Reinhard Beutner, professor of pharmacology, Hahnemann Medical College and Hospital, Philadelphia, \$200, to investigate the toxicity and detoxification of local anesthetics.

Grant 411: Linn J. Boyd, professor of pharmacology, New York Medical College, \$300, to investigate the effects of hypnotics on mercurial diuretics.

Grant 412: Anne Forbes, Massachusetts General Hospital, Boston, \$400, to investigate the effect of various endocrine diseases and the administration of various endocrine products on the 17-keto-steroid secretion in the urine.

Grant 413: Claude E. Forkner, New York Hospital, Department of Medicine, \$300, to investigate bronchiectasis, etiology and treatment.

Grant 415: B. K. Harned, professor of pharmacology, and V. V. Cole, assistant professor of pharmacology, Woman's Medical College of Pennsylvania, \$300, to investigate the effects of sulfanilamide and sulapyridine on hepatic function.

Grant 416: Alrick B. Hertzman, associate professor of physiology, St. Louis University School of Medicine, \$500, to investigate peripheral circulation.

Grant 417: H. E. Hoff, assistant professor of physiology, A. W. Winkler, instructor in medicine, and P. K. Smith, research assistant in pharmacology and toxicology, Yale University School of Medicine, \$250, to investigate the action of ions.

Grant 419: Thomas H. McGavack, New York Medical College, \$300, to investigate the action of lipocae and pancreatic extracts.

Grant 420: Lester M. Morrison, Temple University Medical School and Hospital, \$300, to investigate the effect of sulfanilamide on infections of the gallbladder.

Grant 421: Herbert Silvette, assistant professor of pharmacology, University of Virginia Medical School, \$250, to investigate the effects of the antidiuretic hormone of the posterior pituitary gland.

Grant 422: Charles W. Turner, professor of dairy husbandry, University of Missouri College of Agriculture, \$500, to investigate the action of lactogenic hormone in cases of deficient lactation.

Grant 423: Trent B. Johnson, professor of organic chemistry, Yale University School of Medicine, \$250, to investigate pyrimidines.

Grant 426: J. P. Quigley, Department of Physiology, Western Reserve University School of Medicine, \$250, to investigate the mechanism of pylorospasm.

Grant 428: Milton Kissin, Beth Israel Hospital, New York, \$50, to investigate the influence of aminophylline among cardiac patients.

Grant 429: John A. Vaichulis, Loyola University School of Medicine, \$300, to investigate the separation of the pressor and oxytocic fractions from the pituitary gland.

Grant 430: J. P. Simonds, Department of Pathology, Northwestern University Medical School, \$100, to investigate the selective action of different types of poisons on the kidneys.

Grant 431: Meyer Bodansky, professor of pathologic chemistry, University of Texas School of Medicine, \$200, to investigate the metabolism and pharmacology of paraldehyde.

Grant 433: Harry Beckman, professor of pharmacology, Marquette University School of Medicine, \$250, to investigate the prophylaxis of malaria.

Grant 434: William R. Lyons, Division of Anatomy, University of California Medical School, \$200, to investigate lactogenic hormones.

During 1941 the following grants were made:

Grant 436: Richard C. de Bodo, associate professor of pharmacology, New York University College of Medicine, \$350, to investigate the antidiuretic action of the narcotics.

Grant 437: M. L. Tainter, professor of pharmacology, Stanford University School of Medicine, \$250, to investigate sympathomimetic amines.

Grant 438: George L. Maisen, assistant professor of physiology, Wayne University College of Medicine, \$200, to investigate the effect of certain drugs on the strength of skeletal muscle.

Grant 439: H. N. Cole, clinical professor of dermatology and syphilology, Western Reserve University School of Medicine, \$45.60, to investigate the effect of the administration of gold sodium thiosulfate.

Grant 440: W. E. Hambourger, assistant professor of pharmacology, Western Reserve University School of Medicine, \$100, to investigate the action of drugs on the central nervous system.

Grant 441: Harald G. O. Holck, associate professor of pharmacology, University of Nebraska College of Pharmacy, \$150, to investigate the relation of sex to drug action.

Grant 442: Morton McCutcheon, associate professor of pathology, University of Pennsylvania School of Medicine, \$150, to investigate cellular locomotion.

Grant 443: A. B. Baker, assistant professor of neuropsychiatry and neuropathology, and Raymond N. Bieter, professor of pharmacology, University of Minnesota Medical School, \$500, to investigate toxic effects of sulfanilamide and derivatives on nervous system and effect of vitamin B complex in prevention of such injuries.

Grant 445: Paul L. Day, professor of physiologic chemistry, and John R. Totter, instructor in physiologic chemistry, University of Arkansas School of Medicine, \$360, to investigate ocular manifestations of tryptophan deficiency.

Grant 446: Carl A. Dragstedt, professor of pharmacology, Northwestern University Medical School, \$100, to investigate the effect of heparin on anaphylactic and related phenomena.

Grant 447: W. F. Hamilton, professor of pharmacology and physiology, University of Georgia School of Medicine, \$125, to investigate blood pressure responses in normal and anesthetized animals.

Grant 448: Victor G. Haury, associate professor of pharmacology, Jefferson Medical College of Philadelphia, \$250, to investigate the pharmacologic and physiologic behavior of magnesium, calcium and potassium.

Grant 449: Alrick B. Hertzman, professor of physiology, St. Louis University School of Medicine, \$500, to investigate peripheral circulation.

Grant 450: Linn J. Boyd, professor of pharmacology, and David Scherf, associate clinical professor of medicine, New York Medical College, \$50, to investigate the effect of strophanthin in paroxysmal tachycardia.

Grant 451: W. J. MacNeal, director of the Laboratories of Bacteriology, New York Post-Graduate Medical School and Hospital, \$400, to investigate therapy of experimental viridans endocarditis.

Grant 452: W. J. MacNeal, director of the Laboratories of Bacteriology, New York Post-Graduate Medical School and Hospital, \$250, to investigate the bacteriophage phenomenon and therapeutic application of bacteriophages.

Grant 453: Amedeo S. Narrazzi, assistant professor of pharmacology, New York University College of Medicine, \$500, to investigate sympathomimetic amines.

Grant 454: W. L. Mendenhall, professor of pharmacology, and Albert J. Plummer, assistant professor of pharmacology, Boston University School of Medicine, \$50, to investigate the quantitative determination of theophylline.

Grant 455: Frederick H. Pratt, professor of physiology, and Marion A. Reid, instructor in physiology, Boston University School of Medicine, \$100, to investigate the effect of cardiac drugs on the denervated lymphatic hearts.

Grant 456: H. Morow Sweeney, professor of physiology and pharmacology, University of South Dakota, \$100, to investigate the effects and mode of action of certain drugs with analeptic properties, namely amphetamine and metrazol, after morphine and sodium pentobarbital respectively.

Grant 457: Leland C. Wyman, associate professor of physiology, Boston University School of Medicine, \$372.50, to investigate the factors controlling the growth and functional efficiency of transplanted adrenal cortical tissue.

Grant 458: George Fahr, professor of internal medicine, University of Minnesota Medical School, \$100, to investigate the effects of lanatoside C on certain types of heart disease.

Grant 459: Mary E. O'Sullivan, Bellevue Hospital, \$100, to investigate the therapeutic effect of estradiol in muscular dystrophy.

Grant 460: Esther M. Greisheimer, professor of physiology, Woman's Medical College of Pennsylvania, \$150, to investigate the effects of sulfanilamide and related compounds on blood sugar and liver glycogen.

Grant 461: Roberta Hafkesbrink, associate professor of physiology, Woman's Medical College of Pennsylvania, \$250, to investigate electrocardiographic changes during the administration of sulfonamide drugs.

Grant 462: B. K. Harned, professor of pharmacology, Versa V. Cole, associate professor of pharmacology, and Hughbert C. Hamilton, associate professor of physiology, Woman's Medical College of Pennsylvania, \$288, to investigate the effects of bromide administered to pregnant rats on the learning ability of the offspring.

Grant 463: Abraham White, assistant professor of physiologic chemistry, Yale University School of Medicine, \$200, to investigate the hormones of the anterior pituitary gland.

Grant 464: A. J. Nedzel, associate professor of pathology, University of Illinois College of Medicine, \$300, to investigate response of the animal body to drugs under different environmental conditions.

Grant 465: L. N. Katz, director of cardiovascular research, Michael Reese Hospital, \$200, to investigate the action of various steroids on capillary permeability.

Grant 466: R. H. Rigdon, associate professor of pathology, University of Tennessee, \$100, to prepare a movie of a clinical case of malaria with the pathologic changes.

TREASURER'S REPORT

Report of the Treasurer of the American Medical Association
for the Year Ended December 31, 1941

Investments (At Cost) as at January 1, 1941	\$2,317,897.84
Bonds Purchased (At Cost)	170,000 00
	<u>\$2,487,897 84</u>
Loss	
Bonds Matured or Sold	65,954 85
	<u>Investments as at December 31, 1941</u>
	\$2,421,942 99
Balance for Investment January 1, 1941 . . .	\$ 209,294 05
Interest Received on Investments—Year 1941	<u>77,424.09</u>
Uninvested Funds December 31, 1941..	<u>286,718 14</u>
Invested and Uninvested Funds as at December 31, 1941 .	<u>\$2,708,661 13</u>

DAVIS MEMORIAL FUND

Balance in Fund January 1, 1941	\$7,426.65
Interest Earned on Bank Balance—Year 1941 .	<u>93 11</u>
Funds on Deposit as at December 31, 1941 . . .	<u>\$ 7,519 76</u>

HERMAN L. KRETSCHMER, Treasurer

AUDITOR'S REPORT

January 31, 1942

To the Board of Trustees,
American Medical Association, Chicago, Illinois.

Dear Sirs:

We have examined the Balance Sheet of the American Medical Association, Chicago, Illinois, as of December 31, 1941, and the statement of Income for the year ended on that date, have reviewed the system of internal control and the accounting procedures of the Association and, without making a detailed audit of the transactions, have examined or tested accounting records and other supporting evidence, by methods and to the extent we deemed appropriate except as hereinafter stated regarding confirmation of receivables and observation of the inventory taking.

The cash and bank balances have been confirmed by count or by certificates from the depositaries. The U. S. Government and other marketable securities were inspected; also, an acknowledgment as to custody of the securities for safekeeping was received from the Continental Illinois National Bank and Trust Company of Chicago.

We did not independently confirm the accounts receivable by communication with the debtors. The accounts receivable were reviewed as to age and collectibility and, in our opinion, the balances are fully realizable. We reviewed the plan and system of control adopted for inventory taking but we did not observe the taking of the inventories nor did we make tests of the physical existence of the quantities recorded.

Expenditures charged to property and equipment accounts during the year, in our opinion, were properly capitalized as representing additions or improvements. The provision for depreciation for the year appears to be adequate.

In our opinion, subject to the exceptions set forth in paragraph three, the accompanying Balance Sheet and related statement of Income present fairly the position of the American Medical Association at December 31, 1941, and the results of the operations for the year, based on the accounting procedures employed by the Association regarding which the following observations are submitted:

(a) In accordance with the established practice of the Association, the accounts as stated do not include (a) unrecorded assets in respect of accrued interest on bond investments, and membership dues unpaid; and (b) provision for accrued property taxes for the year 1940, and sundry unpaid bills and wages.

(b) Subscriptions paid in advance are stated at an estimated amount which is based on cash received in December 1941, on account of 1942 subscriptions. This procedure conforms to the method used in prior years.

(c) Advance payments on publications include an estimated amount (\$137,077.28) for prepaid subscriptions to HYGIEA and the amount (\$41,813.79) received in advance for January 1942 advertising, directory information sales and service.

(d) As of January 1, 1941, the land and buildings accounts were restated on the basis of cost, and the complementary credit

in respect to unrealized appreciation applicable thereto was eliminated from the net worth of the Association.

We have received a letter from Messrs. Loesch, Scofield, Loesch and Burke, attorneys for the Association, regarding litigation pending against the Association or its officers at December 31, 1941, which states that the following lawsuits had been filed:

Jean Paul Fernel—\$1,000,000 00 (libel)
William E. Balsinger—\$100,000.00 (libel)
Muriel Longini—\$1,000 00 (claim)
United States of America (conspiracy in restraint of trade)

The attorneys state that in their opinion all of these suits will be defeated.

Fidelity insurance is carried against the undermentioned officers and employees, in the amounts stated:

Dr. Olin West, Secretary and General Manager.....	\$10,000 00
Dr. Herman L. Kretschmer, Treasurer.....	10,000 00
E. A. Hoffman, Cashier.....	10,000 00
J. E. Hartigan, Assistant Cashier.....	2,000 00
Sundry Employees (thirteen, \$1,000 00 each) . . .	13,000 00
	<u>Total Fidelity Insurance</u>
	\$45,000 00

We have pleasure in reporting that the books are well maintained and that every facility was afforded us for the proper conduct of the examination.

Yours truly,

PEAT, MARWICK, MITCHELL & Co

INDEX TO STATEMENTS

Balance Sheet, as of December 31, 1941	Exhibit "A"
Income Account, for the year ended December 31, 1941	"B"
Journal Operating Expenses, for the year ended December 31, 1941	Schedule "1"
Association and Miscellaneous Expenses, for the year ended December 31, 1941	"2"

EXHIBIT "A"

BALANCE SHEET

AS OF DECEMBER 31, 1941

ASSETS	
Property and Equipment—at cost	
Land	\$ 328,773 98
Buildings	\$1,176,582 08
Machinery and Printing Equipment....	502,167 59
Office and Laboratory Equipment.. . . .	193,009 90
	<u>1,871,759 57</u>
Less—Reserve for Depreciation	913,343 45
	<u>958,416 12</u>
Type Metal (Book Inventory)—at average cost	22,330 01
Building under Construction	148,400 00
	<u>1,457,920 11</u>
Total Property and Equipment	
Marketable Securities—at cost (valuation based on market quotations \$2,475,533 78).	
U. S. Government Securities	1,723 816 81
Railroad, Municipal and Public Utility Bonds	698,126 18
	<u>2,421,942 99</u>
Representing Investments of:	
General Fund	621,942 99
Association Reserve Fund	350,000 00
Retirement Reserve Fund	100,000 00
Building Reserve Fund	450,000 00
Depreciation Reserve Fund	900,000 00
	<u>286,718 14</u>
Cash held by Treasurer for Investment.. .	116,420 56
Cash in Bank and on Hand	
Accounts Receivable	
Advertising	89,508 69
Reprints	2,576 30
Directory, 16th Edition—Estimated realizable balance	646 72
Miscellaneous Accounts Receivable	1,424 18
	<u>94,155 89</u>
Inventories of Materials, Supplies, Work in Progress and Publications	134 560 06
Expenditures on Publications in Progress..	102 853 21
Prepaid Expenses, Deposits and Advances	
Insurance, etc	9,875 17
Deposits and Advances	15,129 68
	<u>25,004 85</u>
Total	<u>\$4,632,515 91</u>

LIABILITIES:

Accounts Payable:

Co-operative Medical Advertising Bureau.....	\$ 15,568.84
Miscellaneous	11,782.26
Total Accounts Payable	27,351.10
Subscriptions Paid in Advance.....	52,533.66
Advance Payments on Publications.....	178,891.07

Net Worth:

Association Reserve	\$ 350,000.00
Building Reserve	450,000.00
Retirement Reserve	100,000.00

Capital Account:

Balance as of December 31, 1940 (including \$40,000.00 restored during year which was written off cost value of land in 1933).....	\$3,282,452.34
Add—Net Income for the year ended December 31, 1941	223,347.64
	3,505,799.98
Deduct—Amount transferred during year to Retirement Reserve Fund	25,000.00
	3,480,799.98
Net Worth, December 31, 1941.....	4,380,799.98
Total	\$4,639,575.81

EXHIBIT "B"
INCOME ACCOUNT

FOR THE YEAR ENDED DECEMBER 31, 1941

Journal:

Gross Earnings:		
Fellowship Dues and Subscriptions.....	\$ 795,460.48	
Advertising	1,009,853.96	
Jobbing	6,543.25	
Reprints	202.82	
Books	16,018.96	
Insignia	6,588.84	
Miscellaneous Sales	11,565.14	
Gross Earnings from Journal.....	1,846,233.45	
Operating Expenses—Schedule "1"	1,104,600.38	
Net Earnings from Journal.....	741,633.07	
Association Income:		
Income from Investments.....	\$ 77,424.09	
Interest on Social Security Tax Refund.....	397.06	
Miscellaneous Income	16,611.89	
	94,433.04	
Less—Net Loss on Investments Sold or Called	1,539.10	92,893.94
Gross Income		834,527.01
Association Expenses—Schedule "2"	460,513.58	
Miscellaneous Expenses—Schedule "2"	150,665.79	611,179.37
Net Income		\$ 223,347.64

SCHEDULE "1"

JOURNAL OPERATING EXPENSES

FOR THE YEAR ENDED DECEMBER 31, 1941

Wages and Salaries.....	\$ 540,800.30
Editorials, News and Reporting.....	7,519.99
Paper—Journal Stock	258,964.21
Paper—Miscellaneous	1,226.78
Electrotype and Engravings.....	15,918.08
Binding	745.15
Ink	7,871.43
Postage—First Class	36,505.49
Postage—Second Class	70,031.85
Journal Commissions	23,271.87
Collection Commissions	481.81
Discounts	34,427.29
Express and Cartage	5,570.86
Exchange	1,570.55
Office Supplies	7,312.07
Telephone and Telegraph	3,797.60
Office Printing	10,959.80
Power and Light	14,490.32
Factory Supplies	19,307.38
Repairs and Renewals—Machinery	2,460.39
Insurance and Taxes	28,221.40
Group Hospital Insurance	3,660.07
Building Expenses	39,837.29
Fuel	8,425.43
Payrol	81.00
Miscel	21,709.47
Loss on Metal Dress Sales.....	865.25
Loss on Demolition of Storage Building.....	6,800.11
Bad Debt Loss and Loss on Sales of Equipment.....	2,772.66
	1,176,055.95

Depreciation (based on estimated remaining life):

Building	\$17,860.07
Machinery	13,031.44
Type and Factory Equipment.....	1,324.44
Furniture and Equipment.....	6,022.66
	38,238.61
Total	1,214,294.56
Deduct—Proportion of Overhead Expenses charged to other Publications and Departments	109,694.18
Total Journal Operating Expenses	\$1,104,600.38

SCHEDULE "2"

ASSOCIATION AND MISCELLANEOUS EXPENSES

FOR THE YEAR ENDED DECEMBER 31, 1941

Association Expenses:

Association	\$106,134.94
Bureau of Health Education	39,139.91
Council on Pharmacy and Chemistry.....	56,375.72
Chemical Laboratory	15,728.50
Council on Medical Education & Hospitals.....	67,972.48
Committee on Therapeutic Research.....	6,471.26
Bureau of Legal Medicine and Legislation.....	29,969.55
Bureau of Investigation	16,097.27
Bureau of Medical Economics	28,851.47
Council on Foods and Nutrition	21,718.22
Council on Physical Therapy	18,632.09
Council on Industrial Health	14,623.47
Bureau of Association Exhibits	7,611.49
Committee on Medical Preparedness.....	30,580.04
Laboratory Equipment Depreciation.....	607.17

Total Association Expenses

\$460,513.58

Miscellaneous Expenses:

Legal and Investigating	\$119,183.19
Sundry Publications (net)	31,482.60
Total Miscellaneous Expenses	\$150,665.79

REPORT OF THE COUNCIL ON MEDICAL
EDUCATION AND HOSPITALS*To the Members of the House of Delegates of the American Medical Association:*

1. It is with great regret and with a sense of extreme loss to the Association and to the cause of medical education and scientific medicine that the Council records the death of Dr. William D. Cutter, who had served as Secretary of the Council on Medical Education and Hospitals since 1931. Dr. Cutter died after a brief illness on Jan. 22, 1942. It is the desire of the Council that the following resolution be included in the Proceedings of this annual session:

In the demise of William D. Cutter, M.D., the Council on Medical Education and Hospitals lost a valuable secretary and organized medicine a true friend.

Dr. Cutter's services to scientific teaching, his lifetime devotion to medical education, his unwavering faith in the destiny of American medicine and his career as a medical educator made a splendid contribution to the work of the Council.

His character and ideals happily combined with high ethical values will long be remembered and cherished.

The members of the Council desire to record their appreciation and gratitude for his splendid services and to express their great personal loss in his death.

2. Dr. Herman G. Weiskotten, Syracuse, N. Y., a member of the Council since 1940, assumed the responsibilities of the secretary on March 4, 1942.

3. After a number of conferences, in many of which the Council participated, the U. S. Army and the U. S. Navy early last summer authorized the granting of commissions to junior and senior medical students as second lieutenants in the Medical Administrative Corps Reserve, U. S. Army, or Ensign H V (P), U. S. Navy, with the understanding that they will not be called to active duty until they have completed one year of internship, the choice as to Army or Navy being voluntary. After graduation they are eligible for appointment as first lieutenant, Medical Corps, Army of the United States or Ensign H V (P), U. S. Navy Reserve. The War Department and the Navy Department recently authorized the granting of commissions also to freshmen and sophomore medical students and to students who are bona fide matriculants in approved medical schools. Selective Service has provided for the deferment of all medical students in good standing who fail to meet the physical require-

ments for such commissions in the Army or Navy. Thus there seems to be assurance of a continuing supply of physicians at least for the next three years as future medical officers and for the care of the civilian population. We cannot be sure that the protection now offered premedical students is such as to assure an adequate number of well prepared medical students to meet future needs.

This program, however, does not provide for the training of young physicians beyond the period of a one year internship. Believing that the further education of a certain number of physicians is vital to the future of the country, a committee of the Council and the Advisory Board for Medical Specialties has been appointed, the chief purpose of which will be to work out plans for preserving a percentage of recent graduates for training in the specialties.

4. With regard to the program for speeding up the production of physicians to meet the war needs by accelerating the medical curriculum, the Council is of the opinion that:

The adoption of a program for an accelerated curriculum for approved medical schools during this war period is a decision which should be determined by each medical school.

The decision of a medical school to initiate an accelerated curriculum should be made only after a comprehensive survey of the personnel, facilities and equipment of the school and its ability to give a medical education without deterioration of the quality of the medical instruction and in conformity with the statutes of the various states and the rulings of the state medical boards.

The Council stands ready to make necessary inspections whenever in its judgment such inspections are required to maintain the present high standards of medical education.

The Council believes that financial assistance for needy medical students during the accelerated program is best provided through scholarships or loans.

Similar resolutions have been adopted by the Association of American Medical Colleges and the Federation of State Medical Boards of the United States. In fact, a liaison committee of the Council and the Association of American Medical Colleges has been appointed to confer on this and other problems of mutual interest.

Many of the medical schools have announced that they are planning to adopt an accelerated curriculum. Various plans of acceleration have been adopted, practically all of which involve the elimination of the long summer vacation and the completion of the medical course in approximately three calendar years. Some of the schools plan to admit a new class every nine months, and others will continue to admit only one class annually.

Seven schools have already advanced their senior year, and one hundred and twenty-eight students were graduated in February or March of this year by three of these schools.

Every precaution possible is being taken by the Council to preserve the present high standards of medical education in connection with this acceleration of the medical curriculum.

5. As of March 1, 1942 sixty-five four year medical schools in the United States are approved, one of which is on probation. Recognition of one school was recently withdrawn; this action being taken without prejudice to the students enrolled as of Sept. 1, 1942. In Canada there are nine approved medical schools. In the United States ten schools of the basic medical sciences are included in the approved list, two of them on probation. In Canada there is one approved school of the basic medical sciences. There is also in the United States one school offering only clinical courses which is approved. This school will cease to function with the graduating class of 1942.

Three medical schools were visited during the year, and special reports of progress were received from at least a dozen others.

In cooperation with the Office of Procurement and Assignment, the faculties of medical schools have been classified with respect to availability for medical service in national defense. Affiliated hospital units have also been established, and some of these are in active service. The importance of not permitting any faculty member considered necessary for the operation of a medical school to serve as a member of an affiliated unit has been stressed.

6. The Council's study of continuation courses for practicing physicians is being continued by correspondence and question-

naire. The results are published annually in the Educational Number. In addition there were published in THE JOURNAL in October 1941 and in January and April 1942 opportunities currently available for such study.

7. The members of the Council, the secretary and staff have attended and actively participated in numerous conferences and meetings in medical, educational, hospital, nursing and allied fields, including the Clinical Congress of the American College of Surgeons, the American Hospital Association, National League of Nursing Education, American Dental Association, the American Council on Education and the revision of the Manual of the Essentials of Good Hospital Nursing Service.

8. The theme of the Annual Congress on Medical Education and Licensure was medical education in a war emergency and also the care of the civilian population. The program included addresses by the surgeon generals, or their representative, of the Army, Navy, Public Health Service and the director of Selective Service. Over five hundred medical educators attended and received first hand information on these vital issues.

9. The problem presented by the scarcity of interns and residents is being carefully studied by the Council with a view to preserving the educational aspects of hospital training programs even though the hospital staffs are being depleted by inductions into the nation's armed forces. Hospitals are being advised to conserve the doctors' time for the purely professional work in the hospitals and to delegate the technical work to nonprofessional attendants wherever possible.

10. The Committee on American Health Resorts of the American Medical Association has requested the Council to cause its field inspectors to make inspections of health resorts. The Council has agreed to visit and inspect several spas to ascertain the advisability of assuming responsibility for such a program.

Furthermore, it is understood that a request is to be presented to the House of Delegates at this session for the inspection and approval of schools for the training of medical record librarians.

It was the sentiment of the Council that, if it is to take on these new duties, such inspections and approvals should be in consonance with the usual procedures of the Council.

11. All existing specialty boards, fifteen in number, are currently approved by the Council, as well as subdivisions of the specialties of internal medicine and surgery recognized by the boards in internal medicine and surgery. By agreement with the several boards, concurrent approval of residencies, fellowships and other opportunities for graduate study in the specialties has been established and is apparently operating to the satisfaction of all concerned.

12. The Council has now in process of compilation a volume to constitute part II of the Council's study of graduate medical education, which will deal with institutional apprenticeships, namely internships, residencies and fellowships. Part I, which was completed in 1940, covered a field study of continuation courses for practicing physicians.

13. A thorough revision of the "Essentials of an Approved Internship" is presented herewith for ratification (see appendix to Report).

14. A summary of the work of the hospital division of the Council for the fiscal year March 1, 1941 to March 1, 1942, including hospital registration, hospitals approved for intern training, for residencies and fellowships in the specialties, as well as the status of technical schools under the supervision of the Council, follows:

<i>Hospital Register</i>	
Hospitals registered, March 1, 1941.....	6,291
Registered during the year.....	267
Closed or transferred to unclassified file.....	149
Hospitals registered, March 1, 1942.....	6,358
<i>Hospitals Approved for Training Interns</i>	
Hospitals approved, March 1, 1941.....	721
Approved during the year.....	39
Removed from approved list.....	19
Hospitals approved, March 1, 1942.....	732
<i>Approved Residencies and Fellowships</i>	
Hospitals approved for residency training, March 1, 1941.....	656
Approved during year.....	31
Removed from approved list.....	5
Hospitals approved for residency training, March 1, 1942.....	682

TECHNICAL SCHOOLS

Approved Schools for Clinical Laboratory Technicians

Approved schools, March 1, 1941.	152
Approved during the year.	29
Removed from approved list.	7
Approved schools, March 1, 1942.	174

Approved Schools for Physical Therapy Technicians

Approved schools, March 1, 1941.	16
Approved during the year.	1
Removed from approved list.	1
Approved schools, March 1, 1942.	16

Approved Schools of Occupational Therapy

Approved schools, March 1, 1941.	6
No schools approved or removed during the year.	
Approved schools, March 1, 1942.	6

INSPECTIONS OF HOSPITALS AND TECHNICAL SCHOOLS

Hospitals

For: Intern training	83
Residencies and fellowships	81
Intern training and residencies	37
Registration	11
Total	212

Inspections

Individual residencies and fellowships investigated	235
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Technical Schools

Clinical laboratory schools	50
Physical therapy schools	9
Occupational therapy schools	2
Total	61

14. During 1941 a complete survey was made of the biographic records of approximately seven thousand physicians practicing medicine in the United States on the basis of medical studies abroad. For a period of twelve years beginning in 1926 the credentials of these physicians were verified by official correspondence with the medical schools abroad, either directly or through the diplomatic services. When it became impossible to continue this system of verification, state medical licensing boards were cautioned to scrutinize carefully all such credentials and to evaluate them with deliberation. The policy was introduced, to become effective with the American Medical Directory in 1942, to exclude from publication those graduates whose credentials obtained abroad have not been officially verified and who do not hold licenses to practice in the United States. The key symbol used in the Directory to denote the medical school and year of graduation, as, for example, Eng 7/'07, will be followed by a ° (Eng. 7, '07°) indicating that the credential has not been officially verified by the American Medical Association but is the M.D. degree or equivalent certificate accepted by the licensing board as meeting the educational requirements for licensure.

15. Major publications during 1941 and up to the time of the preparation of this report compiled by the Council and widely distributed included:

Hospital Service in the United States, containing the register of acceptable hospitals and indicating hospitals approved for internships, residencies and fellowships.

State Board Licensure Statistics, a compilation based on the records of state licensing boards and specialty examining boards.

Medical Education in the United States and Canada, including a list of medical schools currently approved and statistical compilations regarding undergraduate and graduate medical education.

Proceedings of the Annual Congress of Medical Education and Licensure.

Choice of a Medical School.

Approved Colleges of Arts and Sciences, a compilation based on lists of institutions approved by national and regional agencies acceptable to the Council.

Schools Approved for Training Clinical Laboratory, Physical Therapy and Occupational Therapy Technicians.

16. Because of the added responsibilities placed on the Bureau of Medical Economics and the Council by the national emergency, no report is available concerning the resolution adopted by the House of Delegates in 1938 requesting the Bureau of Medical Economics and the Council to undertake a study of the practice in hospitals of pathology, radiology, anesthesia and physical therapy.

17. The Twenty-First Annual Census of Hospitals covered the year 1941 and was reported in the Hospital Number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, March 28, 1942.

The census covers 6,358 registered hospitals with a total capacity of 1,324,381 beds. The increase in number of beds yearly has been uniformly in the neighborhood of 30,000, but the present annual census showed a net increase over the previous year of 98,136 beds. This increase alone is the equivalent of one 269 bed hospital for each day in the year, Sundays and holidays included.

The number of patients admitted during the year was 11,596,188, of whom 10,646,947 were to general hospitals alone.

Births in hospitals number 1,404,940. The rate of increase in hospital births was double that of the previous year.

This latest census of hospitals produced some valuable data which were obtained this year for the first time. Included in these is the number of technical personnel employed in all hospitals. There are, for example, 9,609 full time laboratory technicians and 5,534 full time x-ray technicians. The report includes also dietitians, physical therapists, pharmacists, medical record librarians, other librarians, medical stenographers, occupational therapists, dental hygienists and social service workers.

Other new items covered in this survey were

Number of patients operated on, 5,201,650, or 44.9 per cent of all patients admitted.

Number of deaths in all hospitals, 510,158, or 4.4 per cent of the patients admitted.

Necropsies, 125,640, or 24.6 per cent of the total deaths.

The response to the Twenty-First Annual Census of Hospitals was unusually good, there being only 41 hospitals in a total of 6,358 from which no response was obtained.

18. Finally, the Council desires to emphasize again that great caution should be exercised by medical educators and hospital administrators that there be no lowering of the standards of medical education and hospitals in our efforts to assist the federal and state officials to maintain adequate medical care for the military forces and the civilian population.

Respectfully submitted

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

RAY LAMAN WILBUR, Chairman
REGINALD FITZ
RUSSELL L. HADEN.
CHARLES GORDON HEALD
J. H. MUSSLER.
HARVEY B. STONT
H. G. WEISKOTTEN, Secretary

APPENDIX TO REPORT OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

ESSENTIALS OF AN APPROVED INTERNSHIP

I. INTRODUCTION

1. The primary function of a hospital is to provide facilities where the sick and injured may be given scientific medical care.

2. The operation of a well organized, effective program for the training of interns enhances the quality of care rendered to the sick and in no wise conflicts with the chief purpose for which the hospital is maintained.

3. An important purpose of the internship is to supplement the undergraduate medical course by a well rounded experience of closely supervised clinical practice in diagnosis and therapy.

4. Hospitals which are approved for the training of interns accept a serious responsibility to their interns and to the communities in which they may later practice.

5. The internship is one of the most important phases of medical education. Internships designed without a well supervised educational program, or arranged merely to provide hospitals with resident personnel to relieve visiting physicians of tasks which they do not wish to perform, cannot be approved.

II. THE INTERNSHIP

1. *Basis of the Internship*—The internship is a form of apprenticeship. The intern assists in the care of patients and

receives in return instruction from the hospital staff in the clinical and laboratory aspects of his profession.

2. *Length of Internship.*—An internship should be of not less than twelve months' duration. Longer periods of service are desirable because they permit a more satisfactory educational program and allow the intern sufficient time in which to be trained adequately to assume increasing responsibility in various fields of medicine.

3. *Types of Internship.*—The Council approves "rotating," "mixed" and "straight" internships.

A "rotating" internship is defined as one which provides supervised experience in internal medicine, surgery, pediatrics, obstetrics and their related subspecialties, together with experience in laboratory and radiologic diagnosis.

A "mixed" internship is defined as one which provides supervised experience in two or more, but not in all, of the clinical divisions named.

A "straight" internship is defined as one which provides supervised experience in a single department, although it may include limited opportunity for work in a related subspecialty. Straight internships are now approved in internal medicine, surgery, pediatrics, obstetrics (with or without gynecology) and pathology.

In rotating and mixed internships of a year's duration the time allotted to internal medicine should equal or exceed the time given to any other service. Not more than six months' time in a year's rotating or mixed internship should be devoted to any one branch of the service, including its related specialties. Too frequent a rotation of assignments in such internships is undesirable. Arrangements should be made so that each intern shall devote at least two consecutive months respectively to internal medicine and to surgery.

III. HOSPITALS ELIGIBLE FOR APPROVED INTERNSHIPS

The experience of the Council indicates that the requirements for an approved internship can be met only in a general hospital registered by the American Medical Association, admitting at least 2,500 patients or more per year, having an average daily census of at least 85 patients, exclusive of the newborn and providing a sufficient number and variety of patients in the several branches of medicine in which it undertakes to train interns. For the purpose of this section, patients who are not available to the interns for clinical study are not included.

IV. THE HOSPITAL STAFF

1. *The Staff.*—The staff, both visiting and intern, should be composed of physicians who are graduates of medical schools acceptable to the Council. The visiting staff should be composed of physicians (a) who are of unquestioned professional and moral integrity, (b) who are proficient in the fields of practice to which they devote themselves, (c) who give personal attention to the patients under their charge and (d) who pledge themselves, both individually and as a group, to provide ample instruction to the intern staff and to cooperate in their work.

V. CLINICAL RECORDS

1. *Histories.*—Adequate records should be maintained. The attending physician or surgeon should be directly responsible for the accuracy and completeness of clinical records concerning all patients under his care.

2. *Endorsement of Records.*—All case records should show by signature the names of the persons who have written them or their individual parts. Orders for treatment or for special diagnostic studies and progress notes should be signed by the person who writes them. Case histories and physical examinations completed by interns should give evidence of having been verified by the attending physician.

3. *Filing and Indexing Records.*—A competent medical record librarian should be in charge of the filing and indexing of records. To be of educational value, all case records should be readily available for special study or for reference work. When a patient is readmitted to the hospital, all previous records of his case should be obtainable without undue loss of time. Besides the usual indexes of patients by name and number, there should be an index arranged according to primary and secondary diagnoses; all surgical procedures should be listed, and the names of physicians who refer patients to the hospital should

also be recorded. Statistics concerning the hospital's clinical work should be compiled monthly and should be available at all times to the medical staff. An analysis of these figures should be included in the annual report and should be classified by departments, i. e. internal medicine, surgery, obstetrics, pediatrics (excluding the newborn), gynecology, ophthalmology, otolaryngology and so on, presenting for each department at least the following data concerning private and ward services:

Number of patients admitted or discharged.
Number of hospital days of care or average daily census.
Deaths and necropsies.
Surgical procedures.

VI. LABORATORIES

1. *Equipment.*—There should be clinical and pathologic laboratories in the hospital, under competent direction. The laboratory or laboratories should be equipped and staffed to perform ordinary routine tests, including bacteriologic, serologic, chemical, basal metabolic and tissue examination.

2. *The Pathologist.*—The pathologist should hold the degree of doctor of medicine from an approved medical school and should have qualifications in pathology acceptable to the Council. He should give to the hospital sufficient time to enable him (a) to supervise adequately the work done in the main pathologic laboratory of the hospital and in its branch laboratories if any, (b) to examine or supervise the examination of all tissues removed in surgical operations and to furnish reports of their gross and microscopic findings, (c) to perform or supervise the performance of all necropsies conducted in the hospital and render a full report of the findings, (d) to assist in the teaching of interns, (e) to be available for consultation with members of the attending and intern staff meetings and conduct or participate in clinical-pathologic and departmental conferences.

3. *Necropsies.*—The hospital should provide proper facilities for the conduct of postmortem examinations in the presence of interns and staff. The necropsy rate has come to be recognized as an index of the scientific interest of the medical staff, and well performed postmortem examinations enable progressive physicians to improve their clinical ability. No hospital will be approved for intern training which does not maintain each year a record of necropsies performed in at least 15 per cent of its deaths exclusive of stillbirths and cases released to legal authorities. Beginning with the calendar year 1943, a minimum of thirty-six necropsies a year will also be required.

4. *Records.*—A copy of each examination performed in the laboratory of pathology should be retained in the department in addition to the copy filed on the patient's clinical record. All these examination reports should be indexed by name, number and diagnosis. Slides for microscopic study of specimens removed at operation or by necropsy should also be filed in the laboratory.

VII. RADIOLOGY

1. *Equipment.*—This department should be equipped at least with suitable protected apparatus for roentgenographic and fluoroscopic procedures. The rooms provided for fluoroscopy and for viewing roentgenograms should be large enough to accommodate comfortably both interns and attending physicians during the examination of patients or interpretation of films.

2. *The Radiologist.*—The radiologist should hold the degree of doctor of medicine from an approved medical school and should have qualifications in radiology acceptable to the Council. He should give to the hospital sufficient time to supervise adequately the technical work of the department, to perform or supervise fluoroscopic examinations, to interpret films, to consult with staff physicians, and to instruct the interns. He should also attend staff meetings and the meetings of his department.

3. *Records.*—A copy of each examination report should be kept in the department in addition to the one filed in the patient's record. These reports and their original films should be filed and indexed by name, number and diagnosis.

VIII. MEDICAL LIBRARY

There should be a medical library, in charge of a competent librarian, located where it is readily accessible to the interns and staff and containing a useful collection of recent editions of standard text and reference books and current files of not less than ten of the representative medical journals. Interns should be encouraged to use the library in connection with their clinical work and may properly be asked to report on current

medical opinion concerning any special case at the bedside or to review current literature on any selected topic more formally at staff conferences or at journal club meetings that may be organized for the purpose of stimulating an interest in reading.

IX. ORGANIZATION FOR INTERN TRAINING

1. The staff should be organized into departments or sections representing such specialties as internal medicine, surgery, pediatrics, obstetrics, pathology and radiology, in order to administer the professional services of the hospital and to supervise the program of intern training to best advantage. Overdepartmentalization should be avoided, although in large hospitals departmentalization may extend to include such other specialties as ophthalmology, otolaryngology, orthopedic surgery, urology, neurology and psychiatry. Each department or section should have a chairman or department head to serve for at least a year. He should be well qualified for this position by experience in his special field, should be responsible for the general conduct of the clinical work in his department and should help to formulate and execute the intern training plan to be carried out in his department. Frequent rotation of attending physicians in charge of the various services should be avoided. Assignments should be made so that the intern has opportunity each day to meet his attending physician for the conduct of systematic ward rounds or clinics and for the study of the patients under his care. In hospitals where the management of private patients is part of the intern's responsibility, no intern should be called on to assist at any one time an unreasonable number of attending or visiting physicians.

2. *Conferences.*—The staff, either as a whole or by departments, should conduct periodically and at least once a month, staff or departmental meetings in which the work of the various clinical or laboratory services is thoroughly analyzed. Interns should be expected to attend and to take an active part in these meetings. Each month there should be one or more clinical-pathologic conferences. In addition, there should be such departmental conferences as the current activities of the various departments may require. These conferences should be educational in nature and more than a perfunctory demonstration of interesting material. As has been suggested, the intern also should be encouraged to read medical literature in connection with his clinical work and may properly be asked to report formally on current medical opinion concerning any special case.

3. *Intern Committee.*—There should be a committee of the staff, chosen from the chairmen of the several departments in the hospital, charged with the duty of organizing, supervising and evaluating the plan of intern instruction. The teaching obligations of individual staff members cannot be delegated to this committee but should be supervised by it.

X. NATURE OF THE INTERN'S DUTIES

Each intern on duty in any clinical department should write or dictate the history, physical examination and his own diagnostic impression of all patients assigned to him. He should have laboratory work assigned to him of such nature as to give him familiarity with clinical laboratory methods and to develop in him competence in the use of all those which the average physician may be called on to perform. The nonoperative treatment of each patient should, in the main, be his responsibility under critical guidance by the visiting physician.

The intern's record should be checked within twenty-four hours by a competent supervising physician, calling attention to errors in observation and adding supplementary notes containing any relevant data which the intern may have omitted. If the intern's record is acceptable, the attending physician should countersign and thus approve it. The intern should enter notes of progress on the record, describing the patient's clinical course from time to time and make sure that all treatments or special diagnostic studies are correctly recorded. When a patient is discharged, the intern should write a concluding note which describes the final diagnosis and the patient's condition as he leaves the hospital. This should be countersigned by the attending physician.

XI. TEACHING PROGRAM

1. *Bedside Teaching.*—The most important phase of intern instruction consists in well conducted teaching at the bedside. By this is meant systematic instruction of the intern by the

attending physician with an ample discussion of the history, the clinical and laboratory findings, the diagnosis and the treatment of each patient. To conduct such teaching properly is the duty of the attending physician in direct charge of the patients assigned to the intern. It cannot be delegated to others, though it may be supplemented by supervision of the intern's work by junior staff members or resident physicians. Duties which have no educational value should be avoided as far as possible.

2. *Assignment of Cases.*—The teaching program should provide ample time for the intern to study and give thorough care to all patients assigned to him. An excessive number of patients is not conducive to careful work; indeed, undue pressure of routine tasks in a hospital may lead an intern to form habits which are undesirable and even harmful. For each intern assigned to a major service, such as internal medicine, surgery, obstetrics or certain specialties, such as neurology, an admission rate averaging not more than two patients a day is desirable.

3. *Internal Medicine.*—This department should afford each intern an adequate amount of instruction and experience in general medicine and in such special medical technics as transfusion, intravenous and other parenteral therapy, and paracentesis. Preferably there should be facilities for the study of patients with tuberculosis, and with contagious, nervous and mental diseases. Each intern should receive careful instruction in modern diet therapy with technical assistance from trained dietitians. The social aspects of medicine should also receive proper emphasis.

4. *Surgery.*—Surgical training should be planned to emphasize diagnosis and preoperative and postoperative treatment of surgical cases rather than skill in operative technic. Thus the intern's work in surgery should be rather that of an assistant than of an operator. The dressing of surgical wounds should be regarded as an important part of his experience, thus giving him a particularly valuable opportunity to observe carefully the immediate effects of surgical procedures and their treatment. He should obtain instruction and experience in administration of various types of anesthetics under the supervision of a trained anesthetist.

5. *Obstetrics.*—The intern should obtain training and experience by delivering under supervision at least 10 patients. At other deliveries he should act as an assistant, not merely as an anesthetist.

6. *Pathology.*—The intern should receive experience in clinical laboratory work to perfect his skill in routine laboratory procedures. He should also receive instruction from the pathologist in the procedures of pathologic diagnosis. He should attend and, when possible, assist at necropsies, receiving instruction in technic and in pathologic interpretation. He should be required to be familiar with the pathologic studies of surgical specimens and necropsy material which concern his own patients. No other assignment should be permitted to interfere with his attendance at the postmortem examination of any case which has been under his care. Whenever possible, he should assist in the preparation and presentation of the clinical-pathologic conference when cases assigned to him are being reviewed.

7. *Outpatient Department.*—It is desirable that each intern should have supervised experience in outpatient work under circumstances comparable to the office practice of medicine. Outpatient clinics to which interns are assigned should be operated in close affiliation with corresponding services in the hospital, thus encouraging careful follow-up work and observation of patients over a long period of time.

XII. MISCELLANEOUS

1. *Record of Interns' Work.*—Certain state medical examining boards, medical schools and other agencies may desire detailed information regarding the interns' training, and therefore it is suggested that hospitals keep a record of each intern's work. Such information may be supplied to the superintendent or record office by the intern himself on special forms where space is provided for data such as the period of time covered, the service, the number of patients admitted on service, the number of histories and physical examinations completed by the intern, the number of anesthetics given by him, the number of operations performed by him and the number in which he

has assisted, the number of deliveries conducted by him and the number in which he has assisted, the number of necropsies attended, the hours spent in the laboratory, and the number of lectures, clinics and conferences attended.

2. *Rules Regarding Interns.*—The hospital should supply each intern with written or printed rules defining his duties and privileges.

3. *Interns' Living Quarters.*—The hospital should provide for the intern comfortable living quarters, healthful food and suitable recreational opportunities.

4. *Interns' Health.*—The hospital should be responsible for the interns' health, at least to the extent of providing at the beginning of each intern's service a careful physical examination, including a roentgenogram of the chest and immunization against communicable diseases. There should be at all times a readily accessible consultation service for interns with some member of the staff definitely assigned to this work. Periodic x-ray examination of each intern's chest at six month intervals during his term of service is desirable.

5. *Relationship Between Hospital and Intern.*—To avoid misunderstanding, it is desirable that each intern at the time of his appointment should enter into a formal agreement with the hospital defining mutual obligations. Such agreement should be honorably fulfilled by both parties. The breaking of it by either a hospital or an intern is not condoned by the Council. Whenever complaint is made of a breach of agreement it is the policy of the Council to ask each of the parties to submit an explanatory statement. Such statements become a part of the physician's and the hospital's record.

XIII. ADMISSION TO THE APPROVED LIST

1. *Application for Approval.*—Hospitals that desire to be accredited for intern training should apply to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago. For this purpose forms in duplicate will be supplied on request. They should be filled out with care by the superintendent or by some member of the staff who is familiar with the hospital's intern program, and one copy should be returned to the Council.

2. Approval for the training of interns is granted for the current year only and is subject to renewal annually. When conditions warrant it, approval may be withdrawn at any time.

REPORT OF THE COUNCIL ON SCIENTIFIC ASSEMBLY

To the Members of the House of Delegates of the American Medical Association:

Regular meetings of the Council on Scientific Assembly were held during the week of the annual session of the Association in Cleveland in June 1941 and in Chicago on Oct. 31, 1941.

SESSIONS FOR GENERAL PRACTITIONERS

In accordance with the terms of the report of the Reference Committee on Sections and Section Work with respect to a resolution requesting the creation of a Section on General Practice, which was presented to the House of Delegates at the Cleveland session, two Sessions on General Practice in the Section on Miscellaneous Topics will be held at the Atlantic City session. The Council on Scientific Assembly appointed Dr. Lucien Stark of Norfolk, Neb., to serve as chairman and Dr. Wingate M. Johnson of Winston-Salem, N. C., as secretary to arrange a program for the sessions for general practitioners at Atlantic City.

SESSION ON LEGAL MEDICINE

One session in the Section on Miscellaneous Topics will be devoted to a program on legal medicine. The Council appointed Dr. William C. Woodward of Washington, D. C., to serve as chairman and Dr. Alan R. Moritz of Boston as secretary for this session. A program will be presented during the current meeting of the Association.

THE PAN AMERICAN FEATURE OF THE ATLANTIC CITY SESSION

The Council on Scientific Assembly submitted a recommendation to the House of Delegates at the Cleveland session in 1941 to the effect that the Atlantic City session in 1942 be in the

nature of a Pan American session, and this recommendation was approved by the House of Delegates. It was the hope of the Council and of all concerned that it would be possible to have present at the Atlantic City session a large number of the physicians of South and Central America, Mexico and Canada, but, greatly to the regret of the Council and of the officers and members of the American Medical Association, conditions created by the war have made it impossible to carry out the original plans. However, several distinguished physicians from southern countries and from Mexico and Canada have accepted invitations to participate in the scientific work of the Association as presented through the General Scientific Meetings and the meetings of the sections of the Scientific Assembly.

Unless emergencies created by the war interfere, a number of physicians from the Latin American countries and from Canada will contribute to the scientific program to be presented during the Atlantic City session.

It is the very earnest desire of the American Medical Association that cordial and lasting professional relations be established and maintained between the physicians of the United States and those of all the nations of the Western Hemisphere, and, although it has not been possible to carry out fully the proposed plans for the current annual session, it is the hope of the Council on Scientific Assembly that when the war is over it will be possible to arrange for an Inter-American session at which the American Medical Association will be honored by the presence of many of the members of scientific medical organizations of all the countries in North and South America.

The Council desires to express its most grateful appreciation to Dr. Hugh S. Cumming, Dr. Wilbur A. Sawyer and Dr. Howard R. Hartman, members of the Advisory Committee on Pan American Session, for their helpful service in connection with the efforts that were made to carry out the Pan American program proposed for the Atlantic City session.

DETERMINATION OF SERUM SENSITIVITY

At the Cleveland session in 1941 Dr. Walter W. Mott of New York submitted a resolution providing for the appointment of a committee to study the determination of serum sensitivity. This resolution was referred to the Council on Scientific Assembly in accordance with the recommendations offered by the Reference Committee on Miscellaneous Business and was given careful consideration by the Council at its meeting in October.

It was unanimously agreed by the members of the Council on Scientific Assembly that the question of determination of serum sensitivity does not appear to have been sufficiently elaborated from a scientific point of view to warrant a recommendation at this time.

THE SCIENTIFIC PROGRAM

The official program of the Atlantic City session is submitted as a part of the report of the Council on Scientific Assembly.

Within the last few years the officers of the sections of the Scientific Assembly and the Council have persisted in an effort to make the scientific programs more generally interesting and helpful and have encouraged joint section meetings, symposiums and panel discussions. It will be noted through reference to the official program that, because these innovations seem to have met with general approval, several sections have arranged for joint meetings and panel discussions this year.

The Council desires to commend the officers of the sections of the Scientific Assembly for their earnest and efficient service and to express its grateful appreciation to these officers and to thank all those who will appear as contributors to the program to be presented at the 1942 session of the Association.

Respectfully submitted.

JAMES E. PAULLIN, Chairman

CLYDE L. CUNNINGHAM

J. GURNEY TAYLOR.

A. A. WALKER.

FREDERICK A. COLLIER.

FRED W. RANKIN, President-Elect.

MORRIS FISHBEIN, Editor, THE

JOURNAL.

OLIN WEST, Secretary.

} Ex officio.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Arizona

Bill Passed.—S. 14-X has passed the senate, to amend the osteopathic act enacted in 1941. As passed the bill (1) redefines osteopathy to mean "that system of treatment and healing of abnormalities of the human mind and body as taught and practiced in the standard colleges of osteopathy," (2) eliminates the subject of surgery as an examination requirement and (3) prescribes conditions under which osteopaths may practice major surgery and confines such practice to hospitals or institutions "osteopathically owned or controlled."

Bills Introduced.—S. 3-X proposes to make it a misdemeanor for any person infected with a venereal disease and, knowing of that condition, to engage in sexual intercourse. A second such offense is to be deemed a felony. S. 2-X proposes to authorize the state department of health to detain, hospitalize and quarantine any person known to be infected with a venereal disease. A person so detained and quarantined who wilfully refuses to submit to the treatment prescribed by the department is to be guilty of a misdemeanor. H. 18-X proposes to suspend in favor of any person during his active service with the military or naval forces of the United States the annual registration fees required by law.

New Jersey

Bill Passed.—A. 229 passed the assembly, April 13, proposing so to amend the chiropody practice act as to provide, among other things, that chiropody is "the diagnosis of any ailment of the human foot, or the treatment thereof by any one or more of the following means: local medical, mechanical, minor surgical, manipulative and physio-therapeutic or the application of

external medical or any other of the aforementioned means except minor surgical to the lower leg and ankle for the treatment of a foot ailment; not including, however, the treatment of tuberculosis, osteomyelitis, malignancies, syphilis, diabetes, tendon transplantations, bone resections, amputations, fractures, dislocations, the treatment of varicose veins by surgery or injection, the administration of anesthetics other than local, the use of radium, the use of x-ray except for diagnosis, or the treatment of congenital deformities by the use of a cutting instrument or electrosurgery. The term 'local medical' hereinbefore mentioned shall be construed to mean the prescription or use of a therapeutic agent or remedy where the action or reaction is intended for a localized area or part."

Bills Introduced.—A. 292 proposes to require a medical inspector who observes or finds a physical defect in the examination of a school child to notify the parents as to the defects found. If the parents fail to provide remedial treatment within a reasonable time, the child may be excluded from school until such time as remedial treatment has begun. A. 295, to amend the act relating to the public schools of the state, proposes to make it mandatory for the board of education to require immunization to diphtheria as a prerequisite to attendance at school or to require proof of immunity. A. 296, to amend the law relating to compulsory vaccination or revaccination of teachers and pupils in the public schools, proposes to make it mandatory for a board of education to exclude from school any teacher or pupil who has not been successfully vaccinated or revaccinated, unless the teacher or pupil shall present a certificate signed by the medical inspector appointed by the board that the teacher or pupil is an unfit subject for vaccination.

MEDICAL ECONOMIC ABSTRACTS

EXPENDITURES FOR MEDICAL CARE

During the period of 1934-1936 the United States Bureau of Labor Statistics, with the assistance of other government agencies, made numerous studies of consumer expenditures in the lower income brackets. These studies have now been combined

TABLE 1.—Expenditures for Medical Care

Annual Net Income	Average Number of Persons per Family	Medical Care		Per Cent of Total Current Expenditure
		Average Expenditure Per Family	Average Expenditure Per Person	
All families	3.60	\$ 59	\$16	2.9
\$500 to \$600	3.11	22	7	3.4
\$600 to \$900	3.13	33	10	2.9
\$900 to \$1,200	3.41	42	12	2.8
\$1,200 to \$1,500	3.54	53	15	2.9
\$1,500 to \$1,800	3.62	64	18	2.9
\$1,800 to \$2,100	3.76	78	21	4.2
\$2,100 to \$2,400	4.03	81	20	3.8
\$2,400 to \$2,700	4.27	97	23	4.0
\$2,700 to \$3,000	4.37	109	25	4.0
\$3,000 and over	4.81	115	24	2.5

in a "Summary Volume"¹ covering 14,469 families, with an average of 3.6 persons and an average income of \$1,458 located in forty-two cities with a population of over 42,000. No families in receipt of relief or with an annual income of less than \$300 during the year were included, nor any family in which the chief wage earner, classified as a clerical worker, received over \$2,000

a year, but no upper limit was placed on the income of wage earners or on the total family income. Only 1.0 per cent of the families had an average income of \$2,396 or an average per person of over \$1,200.

Table 1 summarizes the expenditures for medical care together with the comment:

"The figures on medical care expenditure represent medical, dental and hospital services purchased in general on an individual fee basis, drugs and medicines, medical appliances, and health insurance premiums. Unpaid medical bills, if incurred within the year of the investigation, are included as expenditures. The total cost of the medical services received by the families represented in the study was undoubtedly somewhat larger than this amount. Clinic and ward services are supported in part by endowments and contributions to hospitals and in part by services contributed by the medical staff. Some, but not many,

TABLE 2.—Families Reporting Service Charged For and Service Free

	Families Reporting Service	
	Charged For	Free
Room in hospital ward	29	6
Clinic	112	4
General practitioner:		
Home visit	315	0
Office visit	360	2
Specialist	128	2

of these families reported the payment of clinic fees, and as many as 4 per cent paid for beds in hospital wards. Information on the subject of free medical care was obtained only in New York. For the 897 white families of employed wage

1. William, Faith M., and Hanson, Alice C.: Money Disbursements of Wage Earners and Clerical Workers, 1934-36, Summary Volume, Bull. 638, Bureau of Labor Statistics, 1941.

earners covered in the New York City investigation," the figures given in table 2 show "the number of families reporting free service, together with those reporting charges for corresponding service."

Some doubt is thrown on the accuracy of the figures concerning free service by the fact that in 1936 there were 2,372,866

TABLE 3.—Distribution of Items of Medical Care

	Average for All Families Surveyed
General practitioner:	
Home visit	\$ 6.95
Office visit	6.86
Dentist	10.84
Medicine and drugs	9.70
Specialist and other practitioner	8.92
Accident and health insurance	4.05
Hospital, private room	3.60
Hospital, beds in ward	1.90
Eyeglasses	3.22
Clinic .....	.45
All other medical expenses	2.69

patients who received service in outpatient departments of New York City.² This is 32 per cent instead of 1.2 per cent that was found among 897 families studied.

2. Rosensohn, Meyer: In the Matter of Pay for Doctors in Municipal Dispensaries, New York Medical Week 17:4 (Aug. 27) 1938.

The expenditure of the average family in this group for all forms of medical care was \$59.18, divided among the items shown in table 3.

EXPANSION OF LOCAL HEALTH ORGANIZATION

Nearly all local public health services except in the large cities have been organized within the last twenty-five years. There were only fourteen counties in the United States in 1915 with full time local service. After the passage of the Social Security Act in 1935 growth was rapid until on June 30, 1941 1,669, or 54 per cent, of the counties in the United States had such full time service. Six hundred and sixty-three of these were single district units, four hundred and twenty-six local district units and five hundred and eighty state district units. On the same date there were, in addition to those county services, one hundred and three cities with full time municipal health units. These one thousand six hundred and sixty counties and one hundred and three cities represented approximately 70 per cent of the total population of the forty-eight states and the District of Columbia. Additional full time service units are now being organized in many defense areas.¹

1. Kratz, F. W.: The Present Status of Full Time Local Health Organization, Pub. Health Rep. 57:194 (Feb. 6) 1942.

WOMAN'S AUXILIARY

Texas

The Northeast Texas District auxiliary met, recently, at Longview. Dr. Preston Hunt, Texarkana, spoke on national defense. A talk illustrated by motion pictures was given by Mrs. Walton Sumner on South America.

The Dallas County auxiliary met, recently, at the Dallas Country Club with one hundred and twenty members and four guests present. The auxiliary has for one of its special projects this year a study of antepartum care.

The Bexar County auxiliary met, recently, in San Antonio with one hundred and five members and five guests present. Mrs. S. F. Harrington, Dallas, president of the state auxiliary, spoke on the subject "Our Opportunities." Dr. Frank N. Haggard, San Antonio, spoke on "The Value of Organized Medicine." The auxiliary voted to give \$40 to the Community Chest. The auxiliary has been given the permission of the Bexar County Medical Society to use its club room, the Pill Box, once a month for parties for soldiers in service. Invitations have been extended to more than three hundred physicians in the army and their wives to participate in the activities of the Bexar County Medical Society and auxiliary.

Capt. Martin Adler, from the Air Corps Basic Flying School, Pottsboro, addressed the Grayson County auxiliary, recently, at Denison, on "The Cause of Rejection of Draftees and What Can Be Done About It." President Mrs. Lipscomb announced that the theme of the programs for the year would be the doctors' wives and national defense.

The Tom Green eight county auxiliary met on January 5 in the home of Mrs. Aubrey L. Lewis, San Angelo, with eight members and two visitors present. Mrs. Mildred M. Campbell, area recreation supervisor of the WPA, spoke on "Soldiers' Recreational Problems."

West Virginia

The Woman's Auxiliary to the McDowell County Medical Society met, recently, at the Appalachian Building in Welch. Mrs. H. P. Evans, president, called the meeting to order, and Mrs. Welch England, state president, spoke on "Nutrition and a World Crisis." A motion was carried to donate \$10 to the Crippled Children's Society. The Hygeia Committee reported twenty-five subscriptions for the schools.

The Woman's Auxiliary to the Raleigh County Medical Society met recently at Beckley. Mrs. E. Newton DuPuy, president, presided. There were thirty-three members and guests

present. Miss Mary Virginia Gill, executive secretary of the Raleigh County Tuberculosis Association, spoke on the tuberculosis program. Dinner was served and then several tables of bridge were formed.

Wisconsin

The Winnebago County medical auxiliary met recently at Oshkosh and elected the following officers: president, Mrs. W. N. Lum; president-elect, Mrs. G. C. Owen; secretary-treasurer, Mrs. E. B. Williams; parliamentarian, Mrs. J. W. Lockhart. A report on the national session in Cleveland in June was given by Mrs. Marvin Steen, who attended as a delegate. Mrs. T. D. Smith of Neenah reported on the state meeting held in Madison in September.

The Rock County auxiliary has been active in placing copies of *Hygeia* in homes, schools and libraries and in carrying out philanthropic projects. The Janesville group has worked for the benefit of Mercy Hospital and the Beloit members for the municipal hospital. All have cooperated in serving Pinelhurst, providing gifts for all patients at Christmas time and offering entertainment from time to time.

The auxiliary to the Winnebago County Medical Society decided to place *Hygeia* in beauty parlors in Oshkosh, Neenah and Menasha.

Nineteen members met at the home of Mrs. Henry Peters, Oconomowoc, for the meeting of the Waukesha County medical auxiliary. The annual election resulted as follows: president, Mrs. T. H. Nammacher, Oconomowoc; president-elect, Mrs. J. C. Frick, Waukesha; vice president, Miss Hertha Voje, Oconomowoc; secretary, Mrs. Floyd W. Aplin, Waukesha, and treasurer, Mrs. W. H. Oatway, Waukesha. Reports of the state meeting held in Madison were given by Mrs. Oatway, delegate, and Mrs. W. T. Murphy, alternate.

A former national and state president of the auxiliary, Mrs. R. E. Fitzgerald, Wauwatosa, spoke to the Rock County auxiliary recently. Mrs. Fitzgerald, who is also international president of Gamma Phi Beta sorority, is serving as National Parliamentarian of the Auxiliary to the American Medical Association. She stressed study clubs as a project, suggesting a program of legislation, the nutrition campaign of the American Medical Association and book reviews. Guests at the meeting included Mrs. E. P. Bickler, Milwaukee, state treasurer; Dr. Jessie Allen, Beloit, who organized the county auxiliary; Dr. J. R. Harvey, Footville, vice president of the Rock County Medical Society, and Dr. W. T. Clark, councilor for this district.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

Changes in Health Officers.—Dr Caroline H Calhoun, Chatom, has been named health officer of Coosa County to succeed Dr William H Goff, Rockford, who resigned to enter private practice, it is reported.—Dr Isaac N Jones, Greensboro, has been appointed in charge of the Hale County health unit, succeeding Dr Eldridge T. Norman, Greensboro, who resigned to resume private practice.

Center for Poliomyelitis.—A new infantile paralysis center was recently opened at the Tuskegee Institute, forming a special unit of the John Alston Andrew Memorial Hospital. It is a three story fireproof building equipped with modern facilities, including a gymnasium with treatment pool, whirlpool arm and leg baths and electrotherapeutic machines, plaster, brace fitting and physical therapy rooms, sun deck, patient wards and laboratory. The center was made possible through a grant of more than \$172,000 from the National Foundation for Infantile Paralysis. A recent grant of \$30,000 will assist in the operation of the new unit.

ARKANSAS

Building for State Board of Health.—The Arkansas State Board of Health is erecting a five story building in Little Rock at a cost of \$150,000. The building is located on the west side of the state capitol grounds in accordance with the master plan of the state planning board for the beautification of the capitol grounds. The structure is fireproof, of reinforced concrete and faced with white limestone.

District Meeting.—The Fifth Councilor District meeting of the Arkansas Medical Society was held at the Garrett Hotel, El Dorado, recently, with the following speakers: Drs. Robert Lyle Motley, Memphis, Tenn., on "Diagnosis of Digestive Disturbances and Their Physiologic Explanation", Raphael Eustace Semmes, Memphis, "Rupture of the Intervertebral Disk as the Common Cause of Low Back Pain and Sciatica," and Charles B. Huggins and William W. Scott, Chicago, "Studies on Prostatic Cancer."

CALIFORNIA

State Medical Meeting, May 4-7.—The California Medical Association will hold its annual meeting in Del Monte, May 4-7, under the presidency of Dr Henry S. Rogers, Petaluma. Included among the out of state speakers will be Dr. Wallace H. Cole, Minneapolis, on "War Treatment of Fractures", Robert Commons, A.B., Boston, and Dr Arthur L. Guedel, Los Angeles, "Controlled Respiration", Dr. Carl M. Peterson, Secretary, Council on Industrial Health, American Medical Association, Chicago, "Wartime Problems in Industrial Medicine," and Dr Wallace M. Yater, Washington, D. C., "Diseases of the Heart Amenable to Surgical Treatment." Among California physicians participating in the program will be

Dr John Homer Woolsey, Woodland, Soft Tissue Wounds Gas Gangrene and Tetanus
Dr Lowell A. Runtz, San Francisco, Sulfonamide Medication
Dr Alfred C. Reed, San Francisco, Nutritional Enteritis as a Deficiency Syndrome
Dr Clinton H. Thunes, Los Angeles, Present Status of Vitamin P
Dr Leonid S. Chernov, San Francisco, New Transverse Low Abdominal Incision
Dr Arthur J. Hummelt, Oakland, Fluid Imbalance in Surgery—A Four Point Plan of Attack
Dr James W. Ravencroft, San Diego, Treatment of Incomplete and Inevitable Abortions
Dr Ervin H. Epstein, Oakland, Photosensitization in the Treatment of Psoriasis
Dr William T. Grant, Los Angeles, Clinical Diagnosis of Cerebellar Injuries

A number of symposiums will be included on the program, among which will be one on military surgery with the following speakers: Drs. Cole, "Present Status of the Treatment of Poliomyelitis", Frank S. Dolley, Los Angeles, "Chest Injuries in War", Lewis A. Mosen, Los Angeles, "Traumatic Shock and Hemorrhage," and Don D. Weaver, Oakland, "Treatment of Burns." Representatives of the medical corps of the army and navy will be on the general program.

GEORGIA

The Fischer Awards.—The L. C. Fischer award of \$100 for the best written paper presented before the Fulton County Medical Society showing the most original research went to Drs. Carter Smith, Henry Clifford Sauls and Charles F. Stone Jr. for their paper entitled "Subacute Bacterial Endocarditis Due to Streptococcus Viridans." A similar prize for research was won by Drs. Emmett D. Cohn, Rudolph A. Bartholomew and William H. Grimes Jr. on "Interpretation of Blood Pressure Behavior During Pregnancy and the Puerperium." All are from Atlanta.

Laboratory for Diseases of Eye.—The Eye Pathological Laboratory of Grady Hospital, Atlanta, was recently opened. The unit occupies space in the Gray Clinic of the hospital and will be available to all ophthalmologists. It is the gift of Mr. L. F. Montgomery, Atlanta, an alumnus of Emory University. Drs. F. Plumley Calhoun Jr. and William T. Edwards Jr. are in charge of the laboratory. According to the *Bulletin* of the Fulton County Medical Society the laboratory is the only one of its type in the Southeast and is one of about nine of its kind in the country.

Railway Surgeons' Meeting.—The twenty-second annual meeting of the Surgical Association of Atlanta and West Point Railroad Company, the Western Railway of Alabama and Georgia Railroad was held at the Atlanta Biltmore Hotel, March 26. Major Dwight M. Kuhns, U. S. Army, Medical Corps, in charge of the fourth corps area laboratories, Fort McPherson, was the guest speaker on "Measures Being Taken to Protect Troops from Diseases and Infections Following Wounds." Other speakers were Drs. Harry L. Cheves, Union Point, "Traumatic Abdomen", Lewis S. Patton, Athens, "Injuries of the External Eye and Uses of the Sulfonamides in Their Treatment"; Charlie N. Wasden, Macon, "Concussions of the Brain", William Howard Hailey, Atlanta, "Dermatoses in Railroad Workers," and Wallace H. Clark, LaGrange, "Injuries to the Genito-Urinary Tract." Dr. Floyd W. McRae, Atlanta, gave the presidential address.

ILLINOIS

Graduate Conference in Belleville.—The Missouri and Illinois Post-Graduate Committees sponsored a joint clinical conference in Belleville, April 9. Included among the speakers were

Dr. Cyrus E. Burford, St. Louis, Urology—Diagnosis and Significance of Hematuria
Edmund U. Cowdry, Ph.D., St. Louis, Gynecitics
Dr. Walter M. Whitaker, Quincy, Ill., The Role of Fluid Balance in Pediatrics
Dr. Francis J. Draceland, Chicago, Psychiatry—Recognition of the Psychopathic State in the Selectee
Dr. Harold M. Camp, Monmouth
Col. Paul G. Armstrong, Springfield

Tumor Diagnostic Service.—The state department of health has established the third state subsidized tumor diagnostic service at St. Anthony's Hospital in Rockford. Similar services were established at the Methodist Hospital of Central Illinois, Peoria, and at the Memorial Hospital in Springfield. Although the state division of cancer control directs the diagnostic service, the actual management will be the responsibility of the consulting hospitals, which are chosen by the local county medical society. The tumor diagnostic services are designed to provide for the general practitioner a competent consultation service without cost for his suspected cancer cases. No treatment is rendered in any case.

Chicago

Portrait of Dr. Anna Lapham.—Exercises were held on March 17 to dedicate a portrait of Dr. Anna Ross Lapham, assistant professor of obstetrics, Northwestern University Medical School. Dr. Lapham graduated at Northwestern University Woman's Medical School in 1898. She joined the staff of Northwestern University Medical School in 1919 as a demonstrator. In 1922 she became instructor and in 1926 assistant professor. Although she retired in 1929, her name is still included on the list of active instructors. Dr. Lapham was the first woman to reach the rank of assistant professor at the medical school.

Dr. De Lee's Will.—In the will of the late Dr. Joseph B. De Lee bequests provide for establishment of the Joseph Bohvar De Lee Endowment for Medical Education at Northwestern University Medical School and a foundation bearing his name for teaching and research of Northwestern University Medical School and its clinics. The first was provided for with annuity funds of \$10,000 arranged for in 1923 to take effect on his death and the second fund of \$100,000 was created in 1929.

Another \$5,000 goes to the Chicago Maternity Center, which Dr. De Lee founded. The will further stipulates that if \$25,000 remains after specific bequests, a fund to give an annual award for the greatest contribution to obstetrics is to be established in honor of Dr. De Lee's late brother, Solomon Theron De Lee.

KANSAS

New Executive Secretary.—Mr. Oliver Ebel, for five years chief probation officer of the Sedgwick County Juvenile Court, Wichita, has been appointed executive secretary of the Sedgwick County Medical Society. Mr. Ebel succeeds Mr. Jack F. Austin, Wichita, who recently went into army service.

MARYLAND

State Medical Meeting in Baltimore.—The Medical and Chirurgical Faculty of the State of Maryland will hold its one hundred and forty-fourth annual meeting in Baltimore, April 28-29, under the presidency of Dr. Robert Lee Hall, Pocomoke City. Dr. Cyrus C. Sturgis, Ann Arbor, Mich., will deliver one Trimble Lecture on "Syndromes Associated with Leukopenia," and Dr. John Homans, Boston, will give one on "Vasomotor and Other Reactions to Injuries and Venous Thrombosis." There will be a panel discussion on the health of the state as revealed through selective service and army examinations. On Wednesday a round table luncheon will feature a wide range of medical topics. Other speakers on the program will include:

Dr. Hall, Changes in the Practice of Medicine in the Counties of Maryland in the Last Forty Years.
Dr. Thomas B. Aycock, Baltimore, Causalgia.
Dr. Thomas Nelson Carey, Baltimore, Rocky Mountain Spotted Fever.
Dr. Nels A. Nelson, Baltimore, Syphilis in Industry.
Dr. Kenneth L. Pickrell, Baltimore, Local Treatment of Burns.
Dr. Edgar J. Poth, Baltimore, A New Intestinal Antiseptic—Succinyl Sulfathiazole.
Dr. Thomas P. Sprunt, Baltimore, Blood Plasma Proteins.
Dr. Caroline C. Bedell Thomas, Baltimore, Rheumatic Fever.
Dr. Isaac Ridgeway Trimble, Baltimore, Sympathectomy in Peripheral Vascular Diseases.
Dr. Henry P. Ulrich, Baltimore, Ununited Fractures.
Dr. Maxwell M. Wintrobe, Baltimore, Vitamin Deficiencies.
Col. Leon A. Fox, M. C., U. S. Army, chief health officer, Caribbean Division, The Doctor in War.

MASSACHUSETTS

Evans Memorial Lecture.—Dr. William Dock, professor of pathology, Cornell University Medical College, New York, delivered the Robert Dawson Evans Memorial Lecture in the Evans Memorial Auditorium, Boston, March 27. His subject was "Albuminuria and Associated Renal Changes."

New Secretary of State Board.—Dr. Harold Quinby Gallupe, Waltham, has been elected secretary of the Massachusetts Board of Registration in Medicine to succeed Dr. Stephen Rushmore, Boston, who resigned to become dean of Middlesex University School of Medicine, Waltham. Dr. Gallupe graduated at Harvard Medical School, Boston, in 1918.

Changes at Harvard Medical School.—John H. Mueller, Ph.D., associate professor of bacteriology and immunology, has been named professor of bacteriology and immunology at the Harvard Medical School, Boston, effective July 1. He will also take charge of the department at the medical school and at the school of public health. The following men were named to associate professorships: Dr. Fuller Albright, now assistant professor of medicine; Dr. Allan M. Butler, now assistant professor of pediatrics, and Dr. Hiram H. Merritt, now assistant professor of neurology. Dr. Frederick J. Stare, who graduated at the University of Chicago School of Medicine in 1941, has been appointed assistant professor of nutrition.

MICHIGAN

Change in Health Officers.—Dr. Sue Hurst Thompson, West Branch, has resigned as director of district health unit number 2 comprising the counties of Ogemaw, Oscoda, Iosco and Alcona. Dr. Harold W. Seff, West Branch, is the acting director, pending a permanent appointment in June.

The Hickey Lecture.—Dr. Eugene P. Pendergrass, professor of radiology, University of Pennsylvania School of Medicine, Philadelphia, delivered the sixth annual Hickey Memorial Lecture before the Wayne County Medical Society on April 6. His subject was the roentgen diagnosis of pneumoconiosis and silicosis.

Personal.—Dr. Franklin H. Top has been appointed by the Detroit board of health as medical director of the Herman Kiefer Hospital, Detroit.—Dr. Carey P. McCord, Detroit, has been elected to extramural lectureship on occupational diseases at the new School of Public Health of the University of Michigan, Ann Arbor.

Society News.—Dr. Chevalier L. Jackson, Philadelphia, recently discussed "The Bronchoscope and Its Role in Modern Medicine" before the Wayne County Medical Society, Detroit. Dr. Richard H. Overholt, Brookline, Mass., also addressed the society recently on "A Common Masquerading Lung Disease."—Dr. Fred J. Hodges, Ann Arbor, recently addressed the Kalamazoo Academy of Medicine in Kalamazoo on "The Cyclotron as a Medical Instrument."—Dr. Vincent J. O'Connor, Chicago, addressed the Muskegon County Medical Society in Muskegon, March 20, on "Urologic Significance of Low Back Pain."—Dr. Samuel F. Marshall, Boston, discussed "Medical and Surgical Treatment of Gastric Lesions" before the Ingham County Medical Society in Lansing, March 17.

MISSOURI

Leo Loeb Receives Award.—The St. Louis Medical Society presented its award of merit and gold medal, March 3, to Dr. Leo Loeb, emeritus professor of pathology, Washington University School of Medicine. Dr. Loeb was born in Germany in 1869. From 1889 to 1896 he studied natural science and medicine at the universities of Heidelberg, Berlin, Zurich and Freiburg. He was assistant professor of experimental pathology at the University of Pennsylvania School of Medicine, Philadelphia, from 1904 to 1910, when he went to direct the department of pathology at the Barnard Skin and Cancer Hospital, St. Louis. In 1915 he became professor of comparative pathology at Washington, and in 1924 he became professor of pathology. He served as president of the Society of Cancer Research in 1911 and of the American Association of Pathologists and Bacteriologists, 1914-1915. From 1910 to 1912 he was chairman of the Section on Pathology and Physiology of the American Medical Association. Dr. Loeb's principal contributions through research have been on tissue and tumor growth. In acknowledging the award before the society, Dr. Loeb gave an address entitled "Medicine and the Community."

NEBRASKA

State Medical Meeting in Omaha.—The seventy-fourth annual meeting of the Nebraska State Medical Association will be held at the Hotel Fontenelle, Omaha, May 4-7, under the presidency of Dr. Dexter D. King, York. Guest speakers will include:

Dr. Henry W. F. Woltman, Rochester, Minn., Postoperative Neurologic Complications.
Dr. Marcus H. Hobart, Evanston, Ill., Treatment of Athletic Injuries.
Dr. Benjamin Goldberg, Chicago, The Present Day Tuberculosis Problem.
Dr. LeRoy H. Sloan, Chicago, Bedside Neurology for the General Practitioner.
Dr. Samuel J. Kopetzky, New York, Experiences in This War.
Dr. William T. Peyton, Minneapolis, Surgical Relief of Pain.
Dr. Rexford L. Diveley, Kansas City, Mo., Emergency Treatment of Fractures—How to Handle Various Types of Fractures Before They Are Reduced.
Dr. Wyman C. Corydon Cole, Detroit, Establishment of Respiration in the Newborn—Influence of Ether Anesthesia.
Dr. Willard O. Thompson, Chicago, Endocrine Problems in the Male.
Dr. Jacob P. Greenhill, Chicago, Soft Parts Dystocia.

A symposium on chemotherapy will be held on Tuesday afternoon with Nebraska physicians participating. On Tuesday evening a dinner session will be addressed by Mr. J. W. Holloway Jr., Director, Bureau of Legal Medicine and Legislation, American Medical Association, Chicago, on "Medical Licensure in Nebraska."

NEW YORK

Hospital News.—Jamaica Hospital, Jamaica, recently observed its fiftieth anniversary. One of the features of the celebration was the publication of a book entitled "The Jamaica Hospital, a History of the Institution," written by Dr. Francis G. Riley, Jamaica, for many years director of the department of urology.

Gastroenteritis Outbreak in Defense Community.—About one third of the population was affected in an outbreak of about 1,500 cases of gastroenteritis in February in a village in Delaware County. According to *Health News* the illness began suddenly and was characterized by vomiting and abdominal pain. There were no fatalities. A large number of the residents of this village and two neighboring communities are employees of the large manufacturing plant working on the defense program. Further study is being made to determine the exact origin of the outbreak.

Symposium on Dental Caries.—Three symposiums on dental caries were sponsored recently by the state medical and dental societies of the state department of health, cooperating with local organizations. The meetings were in Rochester on March 31, Binghamton on April 1 and Albany on April 2. The speakers were, Dr. Julian D. Boyd, associate professor of

pediatrics, State University of Iowa College of Medicine, Iowa City; Philip Jay, D.D.S., assistant director for oral pathology, University of Michigan School of Dentistry, Ann Arbor, Mich., and Henry Trendley Dean, D.D.S., U. S. Public Health Service. The symposiums correlated the research which has been carried on recently in the following three channels: the effect of nutrition, the effect of bacteria in the mouth and the effect of the chemical content in drinking water.

New York City

Hugh H. Darby Joins Borden Company.—Hugh H. Darby, Ph.D., associate, department of biochemistry, of Columbia University College of Physicians and Surgeons, and known for his contributions in vitamin research, has joined the staff of the Borden Vitamin Company for research and development in the production and application of vitamins and hormones. Dr. Darby, a native of Scotland, received his Ph.D. at Columbia in 1928. He is identified as a discoverer of the existence of vitamin D in plant life and for his spectrographic research on vitamins A, D and K.

Research Meeting.—The Research Society of the Long Island College of Medicine, Brooklyn, met at the college, April 8, for the following program: Dr. Victor Rudomanski, "Quantitative Study of Plasma and Extracellular Fluid Volume Changes in Some Instances of Dehydration"; Dr. Louis C. Johnson, "A Comparative Study of the Complement Fixation and Flocculation Tests in the Diagnosis of Syphilis," and George H. Paff, Ph.D., and Robert A. Lehman, Ph.D., "A Practical Technic and Design for the Assay of Digitalis on the Embryonic Chick Heart." The Long Island College of Medicine sponsored a symposium on psychosomatic medicine, March 26. The speakers included Drs. G. Canby Robinson, Baltimore, H. Russell Meyers, George Draper, Bela Mittelmann, George E. Daniels and Foster Kennedy.

NORTH CAROLINA

Health of Indians.—With a total Indian population in the state of 22,690, North Carolina reports an Indian birth rate of 40 per thousand and a death rate of 7.9. More than eight hundred Indian babies are born in the state each year. Indians share in all public health benefits in North Carolina on the same basis as other citizens. During one year 246 mothers visited the maternal and infancy clinics for antepartum advice. During the same year there were 47 infant visits to clinics. There were 123 Indians on the crippled children's register of the state board of health receiving orthopedic attention. Three field health workers follow up these cases and make home visits.

PENNSYLVANIA

Tuberculosis Society Observes Fiftieth Anniversary.—The Pennsylvania Tuberculosis Society will observe its fiftieth anniversary at a dinner meeting in the Bellevue-Stratford Hotel, Philadelphia, May 7, during the annual session of the National Tuberculosis Association, May 6-9. The Pennsylvania group claims to be the first voluntary tuberculosis society in the country, having been formed in 1892 as the Pennsylvania Society for the Prevention of Tuberculosis.

Immunization Project.—At a recent meeting of the board of trustees of the state medical society, Drs. Alexander Hamilton Stewart and John Moore Campbell Jr., Harrisburg, representing the state department of health, asked cooperation in a proposed comprehensive program of immunization of children over the age of 9 months against smallpox, diphtheria and tetanus. They stated that it was the wish of the department to have these immunizations performed by practicing physicians rather than in state clinics, with the department of health continuing to supply the vaccines and toxoids needed. The board of trustees of the state society endorsed the recommendation and urged active cooperation by the membership of the society.

Pittsburgh

Society News.—The Allegheny County Medical Society devoted its meeting, March 17, to a symposium on diseases of the genitourinary tract; the speakers were Drs. Edward J. McCague, James J. Lee, Joseph G. Moore and John L. Hamilton. The society devoted its February 17 meeting to a symposium on malignant lesions of the colon. The speakers were Drs. John D. Garvin, Leo P. Sheedy, John W. Stinson, Joseph W. McMeans and Kenneth M. Day.—Dr. Harold I. Lillie, Rochester, Minn., discussed "Vasomotor Rhinitis: Résumé of Labyrinthectomy Operation" before the Pittsburgh Otolological Society on March 25.

SOUTH DAKOTA

State Medical Meeting in Sioux Falls.—The sixty-first annual session of the South Dakota State Medical Association will be held in Sioux Falls, May 13-15, under the presidency of Dr. Bertrand M. Hart, Onida. The tentative program lists the following speakers:

- Dr. Edward L. Tuohy, Duluth, Minn., The Treatment of the Patient Over Fifty.
- Dr. Hewitt B. Hannah, Minneapolis, Shock Treatment in Mental Disease: Insulin, Metrazol and Faradism.
- Dr. Samuel E. Sweitzer, Minneapolis, Common and Obscure Skin Diseases.
- Dr. Leo G. Rigler, Minneapolis, X-Ray Diagnosis.
- Dr. Herbert Z. Giffin, Rochester, Discussion of Iron, Liver Extract and Vitamins in the Treatment of Various Types of Anemia.
- Dr. Arnold Schwyzer, St. Paul, Abdominal Pain and Its Local Significance.

An interprofessional program will be held on Thursday afternoon in the form of a symposium covering the "Relationship of the Medical, Dental, Pharmaceutical, Nursing and Hospital Associations to the National Defense Program."

TEXAS

State Medical Association Meeting in Houston.—The seventy-sixth annual session of the State Medical Association of Texas will be held at the Rice Hotel, Houston, May 11-14, under the presidency of Dr. Neil D. Buie, Marlin. Out of state speakers will include:

- Dr. Leonard G. Rowntree, colonel, U. S. Army, Washington, D. C., Medical Aspects of Selective Service.
- Dr. Chester A. Stewart, New Orleans, The Feeding of Infants and Children.
- Dr. Tom D. Spies, Cincinnati, Diagnosis of Deficiency Diseases.
- Dr. Fred J. Hodges, Ann Arbor, Mich., The Responsibility of the Roentgenologist in Gastrointestinal Diagnosis.
- Dr. Edwin C. Hamblen, Durham, N. C., Some Complications and Untoward Responses to Endocrine Therapy.
- Dr. Elexious T. Bell, Minneapolis, Nephritis and Nephrosis.
- Dr. Otto Jason Dixon, Kansas City, Mo., Ear Complication in Relation to General Practice.
- Dr. Vilray P. Blair, St. Louis, Cancer of the Mouth.
- Dr. John H. Musser, New Orleans, The Heart That Grows Old.
- Dr. Louis A. Buie, Rochester, Minn., Important Facts Concerning the Diagnosis and Management of Lesions of the Terminal Colon.
- Dr. Thomas L. Pool, Rochester, Lesions of the Bladder and Urethra Occurring in Women.
- Dr. Edward N. Smith, Oklahoma City, The Treatment of Nausea and Vomiting of Pregnancy.
- Dr. Arthur E. Herizler, Halstead, Kan., The Principles of Abdominal Drainage.

Other societies meeting during the state session include the Texas Railway and Traumatic Surgical Association, Texas State Heart Association, Texas Association of Medical Anesthetists, Texas Chapter of the American College of Chest Physicians, the Conference of County and City Health Officers of Texas and the woman's auxiliary to the state medical association.

VIRGINIA

Graduate Course in Industrial Hygiene and Medicine.—A concentrated course for physicians who are going into the field of industrial medicine is now being conducted at the Medical College of Virginia, Richmond, in cooperation with the bureau of industrial hygiene of the state health department, the industrial commission of Virginia, the state department of education and the medical departments of several industrial industries in and around Richmond. Emphasis is placed on the actual practical experience with medical directors in industry.

WASHINGTON

Personal.—Dr. Robert S. Hamilton has been appointed health officer of Clallam County and the city of Port Angeles, succeeding Dr. Alfred E. Eyres who recently resigned to take additional work in public health.—Dr. Calvin L. Longstreth has been appointed health officer for Bellingham.

Society News.—The Spokane County Medical Society was addressed, April 9, by Drs. Hale A. Haven, Seattle, on "Neurosurgical Treatment of Angina Pectoris: Physiologic and Anatomic Factors with Clinical Results," and Joel W. Baker, Seattle, "Physiology and Surgery in Duodenal Ulcer."—The Spokane Surgical Society held an all day session on April 25 with Dr. Richard B. Cattell, Boston, as the guest speaker; at the banquet in the evening he discussed "Selection of Operation for Carcinoma of the Colon and Rectum."—At a meeting of the King County Medical Society in Seattle, March 16, the speakers were Drs. Goodrich C. Schauffer, Portland, Ore., on "The Female Genitalia in Childhood and Infancy," and Harold G. Trimble, Oakland, Calif., "Tuberculosis—The General Practitioner's Problem."

GENERAL

No Examination in Dermatology.—Because of an insufficient number of candidates, the American Board of Dermatology and Syphilology announces that no examination will be held in June at the time of the meeting of the American Medical Association. An examination will probably be held in the fall, notice of which will be published later.

Cancer Campaign Opens.—The American Society for the Control of Cancer, New York, launched its sixth annual educational campaign against cancer, April 1, under the slogan "Conquer Fear, Delay and Ignorance." The campaign aims to emphasize the fact that cancer is curable, to make known to every one the early symptoms by which its onset may be recognized and to point out that to effect a cure treatment must begin promptly after a diagnosis of cancer.

Prize Winners in Safety Contest.—Oklahoma was the national grand prize winner for states in the traffic safety contest sponsored by the National Safety Council, it was recently announced, and Memphis, Tenn., the winner for cities. Oklahoma won the award because of its record of placing first among all states in the southern division for five consecutive years and Memphis for overcoming the handicap of increased traffic on account of war industries and army movements with the reduction of fatalities by 56 per cent. Two other states and five other cities won first place awards in their divisions of the contest: Oregon in the western division, New Jersey in the eastern; Pittsburgh, Omaha, Manchester, N. H., Fond du Lac, Wis., and Aberdeen, S. D., are the five cities which also won first place awards in certain population groups.

Medical Library Meeting.—The Medical Library Association will hold its annual meeting in New Orleans, May 7-9, under the presidency of Miss Mary Louise Marshall, New Orleans. The scientific program will open with a symposium on tropical medicine presented by the following: Dr. George W. McCoy, New Orleans, "Tropical Medicine: Scope and Achievements"; Ernest Carroll Faust, Ph.D., New Orleans, "Amoebiasis, a Tropical and Cosmopolitan Disease"; Dr. Mark F. Boyd, Tallahassee, Fla., "Malaria," and Dr. Guy H. Faget, Carville, "The Story of Leprosy in the United States." The annual dinner will be addressed by Dr. Rudolph Matas, professor of general and clinical surgery emeritus, Tulane University of Louisiana School of Medicine, New Orleans, on "Some Episodes in the Medical History of Louisiana." One session will be devoted to medicine in the Confederacy and another to general reference books of interest to the medical librarian.

Association of the History of Medicine.—The eighteenth annual session of the American Association of the History of Medicine will be held at Chalfonte-Haddon Hall, Atlantic City, N. J., May 3-5. Dr. Jabez H. Elliott, Toronto, Ont., will deliver his presidential address at the dinner Monday evening on "Observation and Interpretation" and Dr. Hugh H. Young, Baltimore, will give an address in commemoration of the one hundredth anniversary of the first application of ether anesthesia, entitled "Crawford W. Long: The Pioneer in Ether Anesthesia." Among other speakers on the program will be:

Dr. Ernest E. Irons, Chicago, Théophile Bonet.
Dr. Benjamin Spector, Boston, Sir Charles Bell and the Bridgewater Treatises.
Dr. Theodore G. H. Drake, Toronto, The Medical Caricatures of Thomas Rowlandson.
Dr. Maurice S. Jacobs, Philadelphia, Thomas Beddoes and His Contribution to the Treatment of Tuberculosis.
George Urdang, D.Sc. Nat., Madison, Wis., The Mystery About the English Pharmacopeia (1618).

The William Osler Medal will be presented this year to John T. Barrett, A.B., of the Boston University School of Medicine. Dr. Francis R. Packard, Philadelphia, will deliver the Fielding H. Garrison Lecture Monday afternoon on "Medical Case Histories in a Colonial Hospital."

Medical Aid to China.—More than a million dollars will be required during the fiscal year ending April 1, 1943 to maintain and expand medical relief work in China, according to a budget estimate issued by the American Bureau for Medical Aid to China. In addition, United China Relief has been asked to allocate more than a million dollars in the current fiscal year for new projects including the establishment of nutritional, maternity and child health centers and a broad medical education program designed to provide skilled personnel needed in China. The largest outlay of funds will be to the Emergency Medical Service Training School program now being conducted under the direction of Dr. Robert K. S. Lim, Peiping. United China Relief states that the budget estimate does not include a proposed expenditure of \$100,000 for a research program which will be carried out this year, if conditions permit, in cooperation with the Chinese Red Cross

Medical Relief Corps, the Chinese National Health Administration and American specialists. This program would embrace among other things the study of the effect of sulfonamide drugs on important epidemic diseases.

Meeting of Association of American Physicians.—The fifty-seventh annual meeting of the Association of American Physicians will be held in Chalfonte-Haddon Hall, Atlantic City, N. J., May 5-6, under the presidency of Dr. James H. Means, Boston. Among the speakers will be:

Dr. Luther Emmett Holt Jr., Dr. Maxwell M. Wintrobe, Anthony A. Albanese, Ph.D., and Landrum B. Shettles, Ph.D., Baltimore, Experimental Amino Acid Deficiencies in Man.
Dr. Frederic M. McPhedran, Edwin L. Lane, Henry P. Close and Edwin S. Cooper, Philadelphia, The Mechanism of Healing of Tuberculosis Cavities.
Dr. Harold W. Jones, Dr. Leandro M. Tocantins, Dr. Lowell A. Erf and Ferdinand L. Munro, Ph.D., Philadelphia, Concentrated Blood Plasma, Intrasternally, in the Treatment of Shock.
Dr. Ralph A. Kinsella, Samuel Rabinovitch and Joseph J. Furlong, St. Louis, Hyposthenia.
Dr. Roy W. Scott and Curtis F. Garvin, Cleveland, Unusual Cardiac Mechanism Associated with Metastatic Cancer Involving the Left Auricle.
Dr. John E. Howard, Lawson Wilkins and Walter Fleischmann, Baltimore, The Metabolic and Growth Effects of Various Androgens in Sexually Immature Dwarfs.
Dr. Willard O. Thompson, Norris J. Heckel and Richard P. Morris, Chicago, Chorionic Gonadotropin: A Potent Stimulator of Growth.
Dr. Wintrobe, Mitchell H. Miller and Richard H. Folliis Jr., Baltimore, What Is the Antineuritic Vitamin?

Mead Johnson Award Goes to Dr. Cowgill.—George R. Cowgill, Ph.D., associate professor of physiologic chemistry, Yale University School of Medicine, New Haven, Conn., was presented on April 1 with the \$1,000 Mead Johnson and Company Prize by the American Institute of Nutrition for researches dealing with the B complex vitamins. According to the citation, Dr. Cowgill received the award "for his fundamental contributions through experimental research on the B vitamins, his leadership in interpreting results of research and his influence in promoting advances in this field of knowledge." The prize is given annually to the research worker in the United States or Canada who, in the opinion of judges representing the American Institute of Nutrition, has published the most meritorious work dealing with the field of B complex vitamins or who has made valuable contributions over an extended period of time. Dr. Cowgill was born in St. Paul in 1893. He received his Ph.D. at Yale in 1921. He was on the staff of Stanford University from 1916 to 1917 and went to Yale University Medical School in 1920. He has been associate professor since 1931. Dr. Cowgill is a member of the Council on Foods and Nutrition of the American Medical Association and of the vitamin advisory committee of the U. S. Pharmacopeia. He has served as editor of the *Journal of Nutrition* since 1939.

Psychiatric Meeting.—The ninety-eighth annual meeting of the American Psychiatric Association will be held at the Hotel Statler, Boston, May 18-21, under the presidency of Dr. James K. Hall, Richmond, Va. There will be sessions devoted to morale and military psychiatry, psychiatry and the U. S. Navy, geriatrics, psychosomatic medicine and schizophrenia. Among the speakers will be:

Dr. Miguel Ozorio de Almeida, director, Laboratory of Physiology, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, Experimental Epilepsy of the Frog.
Dr. Joseph C. Michael, Minneapolis, Multiple Murders Without Comprehensible Motivation.
Dr. Nathaniel J. Berkwitz, Minneapolis, Electric Subconvulsive Shock Therapy of Psychoses Associated with Alcoholism, Drug Addiction and Syphilis.
Dr. Herbert S. Ripley Jr., Charles A. Bolmengel and Ade T. Milhorat, New York, Personality Factors in Muscle Disease.
Dr. Simon Stone, Manchester, N. H., Nonspecific Therapy of Neurosyphilis.
Dr. Earl D. Bond and Thurston D. Rivers, Philadelphia, Follow-Up Studies in Insulin Shock.
Dr. Edward F. Reaser, Huntington, W. Va., Treatment of Catatonic Stupor with Amyl Nitrite and Physiotherapy.
Dr. Oskar Diethelm and Fred V. Rockwell, New York, A Study of the Psychopathology of Aging.
Dr. Herman I. Wurtis and William S. Maurer, New York, "Sham Rage" in Man.
Dr. William A. Horsley Gantt, Baltimore, Measures of Susceptibility to Nervous Breakdown.
Dr. Juliette Louise Despert, New York, Psychopathology of Stuttering.

On Monday evening a public meeting will be addressed by Leonard T. Carmichael, Ph.D., president of Tufts College, Medford, Mass., on "The Contributions of Scientific Psychology to the National War Effort" and Dr. Arthur H. Ruggero to the National War Effort" and Dr. Arthur H. Ruggero, Providence, R. I., "Psychiatric Problems in a Changing World." Tuesday evening there will be a series of round table discussions on alcohol, applications of psychoanalysis to the national emergency, civilian mental health and morale, a special report on experimental data on the unconscious, and military psychiatry.

Statement by New York Psychoanalytic Society and Institute.—This organization has published a statement in which are given the principles governing psychoanalytic education in the New York Psychoanalytic Institute and also the nature of the violations of these principles which in recent years have caused disagreement among workers in the institute. These educational principles are as follows:

1. A preparatory personal analysis is the first essential step in the training of every student, since a psychoanalyst must have a clear understanding of his own emotional make-up in order not to confuse his own personality with his therapeutic efforts. In the preparatory analysis the relationship of the student in training to his analyst is the same as that of a patient to a psychoanalyst. It is doubly necessary, therefore, that the preparatory analysis should be conducted in an atmosphere of quiet scientific objectivity, without injecting the student into the midst of any heated controversy, and certainly without enlisting the student as an ally in any dispute.

2. Once the student is allowed to undertake the analysis of patients, he is encouraged to conduct these analyses under the supervision of instructors who represent varying theoretical and technical points of view.

3. Intermediate and advanced students must have and are given an opportunity to attend seminars for the presentation and discussion of all points of view. It is an injustice to students to allow them to come under the exclusive influence of any single attitude.

4. New theories and clinical findings should first be presented not to elementary students but at scientific meetings of the society, where they can be critically evaluated; and modifications in technic should first be tried out only by those who are already mature in experience.

In recent years, the statement says, the educational committee of the society and institute came to realize that the basic principles referred to were being violated and that the training of certain groups of students was not meeting the requirements of the institute. It is pointed out in the statement (1) that increasing confusion was revealed among elementary students, together with an unscientific tendency to form groups around the persons of individual instructors and to reject the ideas of others with scant hearing; (2) a survey of the distribution of students disclosed that the scope of training was being circumscribed in the case of some students, who remained almost entirely under a single theoretical point of view through each successive stage of their instruction; (3) that in certain instances the relationship of teacher and student was being used as an opportunity to gather together a band of disciples under the pretext of "academic freedom"; (4) students were in some instances encouraged to make radical technical departures from established procedures which they had not yet mastered.

Direct action on these problems was avoided over a period of years in an effort to settle the controversy by the gradual process of scientific education, but these efforts were frustrated. It finally became the duty of the institute to correct the situation, and in April 1941 the educational committee recommended that "Dr. Horney's teaching be limited to lecturing." This recommendation was submitted to the floor of the society and was passed "by an overwhelming majority." The instructor resigned and this was followed by the resignation of four adherents and by the withdrawal of fourteen students. At that time there were eighty-eight members of the New York Psychoanalytic Society and Institute and one hundred and ten students.

The group which withdrew has organized a society under the name of "The Association for the Advancement of Psychoanalysis" and a training institute, which it calls the "American Institute for Psychoanalysis." Since the name of the new group may be a source of confusion to the outside world, and since it takes exception to the "unfounded allegations" which have been advanced as the occasion for these steps and because many questions have been addressed to the society indicating that this situation affects the public interest, the New York Psychoanalytic Society resolved to issue a statement.

The statement points out that for many years the institute carried on its educational activities in an informal fashion, but when the student body grew to more than a hundred the casual arrangements no longer functioned smoothly. A review was made of the records of the student body, and a reorganization of the curriculum was undertaken, based on the students' replies to questionnaires and a study of methods used in other psychoanalytic institutes. The curriculum was divided into a minimum of three years of work and the courses which had been informally considered as essential became formal requirements, additional required courses and electives were provided, and

many new instructors were given an opportunity to teach. A few members of the teaching staff whose methods and theories differed from those of the majority immediately voiced their fear that the reorganization would be used as an opportunity to exclude them from teaching. The dissident group continued to claim that it was the object of unfair discrimination, and these charges after being examined repeatedly by different members and by appropriate committees were finally brought to the floor of the society.

The New York Psychoanalytic Society and Institute is said to be the only organization for training in psychoanalysis chartered by the University of the State of New York and the only institute in New York State recognized for such training by the American Psychoanalytical Association.

FOREIGN

Public Health Under Hitler's Rule.—Typhus has been reported in North Norway, and compulsory vaccination has been ordered in districts liable to infection. According to the *Svenska Dagbladet*, 10,000 people have been vaccinated against typhus and smallpox. The district commissioner of Riga has forbidden all public gatherings in order to prevent the spread of typhus, according to the *Stockholm Tidningen*, February 17.

The school children according to the February 22, and six classes in one school were to have been closed until the children had been deloused. The home secretary has decided, according to the *Berlingske Tidende*, Copenhagen, to introduce legislation providing for compulsory delousing. Typhus has entered central Europe as a result of the Russo-German war, and, according to the *Aftonbladet*, Stockholm, February 24, has entered Denmark from her warring neighbor. The German minister of health, who visited Copenhagen in January to lecture about public health, said that a line had been drawn in the east "over which the lice could not advance," but it is presumed that the lice reached Germany before this line was established. A medical officer at Malmö believes that the danger of typhus infection in Sweden via Denmark is negligible owing to the reduction in traffic. The appearance of typhus at such inland towns as Aarhus, Randers and Aalborg is considered to be due to the large German garrisons there, which are periodically relieved. The Aalborg public health committee has asked the home office, according to *Boersen*, Copenhagen, February 14, to authorize the compulsory delousing of infested persons and also for compensation for damage caused to property by the delousing process. There is said to be real danger of typhus in Aalborg.

According to *Lyons National*, February 19, official communiqué number 86 stated that the German authorities were contemplating the repatriation of prisoners who were students in medicine, pharmacy and dental surgery. Those in these categories must obtain certificates that they were bona fide students before the armistice from the faculty of medicine concerned and must be of lower rank than surgeon sublieutenant. Application for certificates should be made to the Secretariat of State for War, Medical Corps Section, Royal, for the non-occupied zone, and to the Secretariat des Services de la Santé, 28 Avenue Friedland, Paris, for the occupied zone. Students of chemistry and physics were not included in the category. Relatives were reminded that the Germans were only considering the repatriation of these prisoners, but it would be as well to comply with the formalities required straightaway.

Aftonbladet, Stockholm, February 24, reports from Berlin that compulsory service has been introduced in the Ostland for doctors and nurses. Refusals to obey this order are punishable with imprisonment or fines.

CORRECTIONS

Sulfathiazole and Propylene Glycol.—In a communication to the editor entitled "Propylene Glycol a Menstruum for Sodium Sulfathiazole" in *THE JOURNAL*, April 11, page 1317, the word "sodium" in the title should have been omitted. Dr. Fredrick F. Yonkman, who with others signed the letter, writes that he hopes that no attempts may be made to dissolve sodium sulfathiazole instead of sulfathiazole in propylene glycol.

Dr. Luckhardt Not Chairman of Physiology Department.—A news item in *THE JOURNAL*, March 14, page 907, referred to Dr. Arno B. Luckhardt as professor and chairman of the department of physiology, University of Chicago, The School of Medicine. Dr. Luckhardt is professor of physiology and not chairman of the department. He is, however, chairman of the administrative committee of the department of physiology.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 7, 1942.

Physicians Who Became Distinguished Politicians

The Right Honorable Sir Earle Page, minister representing the government of Australia in London, was a surgeon before he became an Australian statesman. In the presence of a distinguished audience, which included visitors from Australia and Canada, he was admitted to the honorary fellowship of the Royal College of Surgeons of England. At the ceremony the president of the college, Sir Alfred Webb-Johnson, said that the council decided to confer this distinction partly because of Page's services to surgery and partly because of the honor he had brought to the profession by his services as a statesman. From the time of Aristotle the hazardous path of politics had attracted many physicians. Several had achieved distinction, for, as sound treatment can be planned only after correct diagnosis, so can sound policy be formulated only in the light of knowledge of the facts. In the British Empire we may be proud of the record of many physicians who have followed a political career. Walter Foster, Christopher Addison, Auckland Geddes and Walter Elliot have held high ministerial office at home. Charles Tupper was prime minister of Canada, and Starr Jameson in South Africa. Godfrey Huggins is prime minister in Southern Rhodesia. In France that sturdy patriot Clemenceau, who today again might have "fired the soul of France," was a medical man, but so was Marat and so was the advocate of the humane killer, Dr. Guillotin.

Addressing Sir Earle Page, the president said "We recall that in the last war you gave splendid service in a busy casualty clearing station. In this war you are one of a team charged with the extirpation of the most dreadful scourge that has ever beset mankind, and for that scourge will be required the most radical excisional operation ever performed. For such a task it is fitting that you should be armed with what is regarded as the highest surgical diploma obtainable."

Replying, Sir Earle Page said that surgical training was most valuable for political life. "The most needed and least common thing in politics is diagnosis before treatment. Too often political treatment is empirical. A huge poultice is clapped on the cancer to hide it from the public instead of doing a complete excision."

The Empire Rheumatism Council

The fifth annual report of the Empire Rheumatism Council states that, though the war has delayed, it has not thwarted its plans. The large measure of attention it has won for a long neglected problem of public health and, in particular, the good progress last year is reason for reassurance. The publication early this year of "Rheumatism—A Plan for National Action" brought a notable awakening of public interest in the serious lack of facilities for effective treatment of rheumatic disease. The task is still to be faced of persuading the community, working through the appropriate authorities, to take action. Several favorable facts in regard to the provision of effective means of treatment are to be recorded. The Carnegie Dunferline Trust has approved of action taken in that town, and a bequest has been received toward the cost of a hospital or clinic in Aberdeen. The treatment centers in the United Kingdom continue their work, and the demand on their services shows how much they are valued. But the position still remains that only a small proportion of sufferers can obtain in the early stages the right diagnosis and the right treatment, which would save a great proportion from becoming disabled.

The Good Health of London

The report for 1940 of Dr. W. Allen Daley, medical officer and school medical officer for London, shows that in spite of the war the health of London has been good. The vast public health department continued not only to provide care and attention for the sick who applied to its hospitals but also carried on all its activities for the prevention of disease. No case of smallpox was notified during the year, and there has been none since June 1934. There was no epidemic of infectious disease. The number of cases of typhoid was only 3 per week. But the number of cases of cerebrospinal fever was increased in comparison with the previous year, 151 deaths against 34. The 1940 maternal mortality was 1.98 per thousand live births. The deaths from tuberculosis showed little variation from 1939, 3,005 against 2,952. However, the incidence in 1940 was greater than the figures indicate, because there has been a wartime reduction in the population of London in consequence of evacuation. The casualties from air raids did not reach the number anticipated, for which hospital preparation had been made.

CHILDREN STOOD THE AIR RAIDS WELL

The number of children of school age still in London at the beginning of 1940 was 180,000; at the end of the year, 85,000. All children about to leave school were examined so that their parents might be advised of any medical reason why certain employments would be unsuitable, and this is the first report to give information on the contraindications. Of 7,395 boys about to leave, 90 per cent were fit for any occupation; of 7,751 girls, 89 per cent. The biggest groups of contraindications were in work involving eyestrain (boys 4.44 per cent, girls 5.29) and in work requiring acute distant vision (boys 4.49 per cent, girls 4.98).

Thinner Books

The war has produced a great reduction in the supply of paper. Much of the raw material for making paper is imported, and shipping space is required for the more important munitions. Paper is rationed and medical journals have had their supplies reduced to half that of their prewar use. A book production war economy agreement has been voluntarily adopted by the publishers to cooperate in the economic use of materials. It is held to be a far better method than the imposing of restrictions by the government, which might be ill conceived and not based on correct knowledge of technical details. Never before in the history of books has it been necessary to regulate the format. It has been suggested that books should be standardized, but there is so much individuality in their making that this would be detrimental. Publishers have to work on a basic ration of paper. The result of the agreement is that books will be thinner and must conform to the typographic standards laid down and to the maximum paper specification. The public is asked to realize that, although the books are thin, they contain just as much reading matter and are just as costly to produce.

Status of Women Physicians in the Air Force

Under a new order from the Air Ministry, women medical and dental officers in the Women's Auxiliary Air Force are authorized to attend men as well as women. Previously their duties were confined to members of the Women's Auxiliary Air Force and they were employed only at the receiving and training centers of the force. The order also grants women equal status in seniority and rank as professional men in the air force. Most of the doctors and dentists of the Women's Auxiliary Air Force will be posted to stations where both men and women are employed, and for the first time women will have the opportunity of becoming station senior medical officers. Until now a distinction has been made between the duties of men and of women holding similar appointments.

PALESTINE

(From Our Regular Correspondent)

Feb 28, 1942

In Wartime

The war taught us economy. We can take as an example Kupat Holim, the workmen's sick fund of the General Federation of Jewish Labor in Palestine, an institution tendering medical aid to nearly 40 per cent of the Jewish population in the country, some two hundred thousand people. Although Kupat Holim put in stocks of medicaments sufficient for the needs of its members for one or two years, the directors were compelled to take strong measures for enforcing the maximum possible economy in the use of medical supplies. Detailed instructions were given for the use of medicaments and x-ray films. All three hundred and fifty physicians employed by Kupat Holim were placed under close supervision of a central control department. The medical staff appreciated the seriousness of the hour and saw that any excessive use of a vital medicine may in the future revenge itself both on the patient and on the physician, as supplies may be entirely exhausted. When prescribing a medicine or treatment, the physician has to take into account conditions two years hence. In this manner we have attained a standard where for each hundred visits only seventy-five prescriptions are written out by Kupat Holim physicians. The same applies to injections. The quantity of x-ray films dispensed monthly to the various x-ray institutes, whether in hospitals or in dispensaries, is calculated by the square centimeter of film. The economy in films was attained not so much by the reduction of diagnostic activities as through using fluoroscopy instead of photographs. An x-ray examination of the lungs, for instance, is carried out as follows. First a fluoroscopy is made, and if a suggestive shadow is discerned in any apex a small photograph is made of that apex. The use of tomographic photographs of the lungs has been confined to serious indications.

The question of insulin is serious. We have been compelled of late to forego the considerable advantages of protamine zinc insulin and revert again to plain insulin. An index of all members of Kupat Holim suffering from diabetes was compiled, with an indication of the number of units required by each patient. The supervising department was thus able to estimate the quantity of insulin required for the next two years and prepare sufficient stocks. It was sometimes necessary to order the insulin by air mail, so that it may be received fresh. The use of insulin for purposes other than diabetes was entirely dispensed with. Similar arrangements were made in connection with the use of liver preparations and serums.

Nurses and attendants were advised to economize. When the price of a thermometer goes up in the open market from 20 cents to \$2.50, strict economy is called for. It is easy to understand the anxiety with which one handles today the x-ray tube, the burner of the quartz lamp and similar apparatus. We have thus reached a stage where after two and a half years of war we are still in possession of sufficient stocks of most of the important medical supplies and instruments to cover our requirements for a lengthy period. There is, however, grave anxiety with regard to some products, especially after America's entry into the war.

The foregoing applies in the main to the institutions of Kupat Holim and the Hadassah Medical Organization. The rest of the population is in a much more difficult position.

PARTICIPATION IN THE WAR EFFORT

Contrary to the miserable condition in which the population of this country found itself in the last war, the present world conflagration found Palestine partly prepared owing to the numerous medical institutions erected such as the Hadassah Medical Organization, Kupat Holim, the Workmen's Sick Fund

of the General Federation of Jewish Labor in Palestine, Magen David Adom, a first aid society, and municipal hospitals and dispensaries in Tel-Aviv, Haifa and Tiberias. Another happy factor was the numerous physicians who during the cruel rule of the ruthless totalitarian régime in Europe, gathered here from the various European countries and found in Palestine a haven of peace. When the Jewish national institutions announced a general mobilization, the doctor and the nurse were the first to answer the call, their number attaining many hundreds. Many of these physicians left regular positions in medical institutions, eight from among the Kupat Holim doctors enlisted and their posts are being kept for them. All in all, eighty-five Jewish physicians have joined up and an additional number, three to five times as large, is still waiting to be called up. There are large reserves which could still be utilized.

The Jewish population has long since completed its first draft of ten thousand men and is now in the course of enlisting the second ten thousand soldiers, together with whom many physicians and nurses are ready and prepared to go wherever they are sent, to the desert, Russia, England and even the Far East. Recently the Women's Palestine Auxiliary Territorial Service was formed, and the required number of women as well as women physicians to serve with such units has already enlisted.

THE HADASSAH MEDICAL ORGANIZATION

A few months before the outbreak of war, Hadassah's long cherished ambition was realized, and the Hadassah University Medical Center in Jerusalem was opened. The center, which has the threefold aim of healing, teaching and research, is composed of the Rothschild Hadassah University Hospital, the Henrietta Szold Hadassah School of Nursing and the Nathan Ratnoff Building, which houses the medical school for post-graduate study and research of the Hebrew University. Within its spacious new quarters, equipped with the most up to date facilities, the hospital's services have been expanded and the standard of treatment raised to a high level. The hospital has over three hundred beds and can be enlarged to accommodate five hundred. Attached to it are x-ray, radium and pathologic institutes, bacteriologic, serologic, chemical and metabolism laboratories, an outpatient department and a hospital social service. To be in readiness for emergencies, the Rothschild Hadassah University Hospital has prepared two hundred reserve beds, and, with Hadassah's aid, the hospitals founded by it and now maintained by the local authorities in Tel-Aviv, Haifa and Tiberias were able to increase their hospitalization facilities for this purpose. In addition, a number of emergency hospitals were opened and equipped with Hadassah's assistance in various parts of the country. To alleviate the consequences of economic depression, free hospitalization for destitute patients from all parts of the country is provided in the Rothschild Hadassah University Hospital, a district medical service has been established in rural localities and a home medical service in towns, and the hospital social service was introduced in new localities.

Marriages

ARTHUR ALEXANDER KNAPP, Virginia Beach, Va. to Miss Florence Beverly Greene at Elizabeth City, N. C., February 3.

GEORGE G. GARRETT, Shreveport, La., to Miss Una Mary Andrus at Grove Hill, Ala. March 1.

MELVIN NEFTIK, Maryville, Tenn. to Miss Mary Ellen Fife of Knoxville, January 22.

DANIEL EDWARD BOWERS, Peoria, Ill., to Miss Virginia Rusk of Tremont recently.

DAVID H. LAWRENCE JR. to Miss Nelda Marlert both of Denver, January 17.

Deaths

James Joseph Walsh ☉ New York; University of Pennsylvania Department of Medicine, Philadelphia, 1895; an Affiliate Fellow of the American Medical Association; formerly dean and professor of nervous diseases and the history of medicine at the Fordham University School of Medicine; consulting physician, Sanatorium Gabriels, Gabriels, N. Y.; author of "Makers of Modern Medicine," "The Thirteenth Greatest of Centuries" (tenth edition published in 1937), "History of Medicine in New York" (published in five volumes), "Medieval Medicine," "Religion and Health" and many others; aged 76; died, February 28, of arteriosclerosis.

Charles Schultze Sample Jr., Passed Assistant Surgeon, United States Public Health Service, Mobile, Ala.; Washington University School of Medicine, St. Louis, 1932; entered the United States Public Health Service as an assistant surgeon Oct. 18, 1934; on the staff of the U. S. Marine Hospital; aged 37; died, March 8, in the U. S. Marine Hospital, Baltimore, of lobar pneumonia following an operation for the removal of a tumor.

Joseph R. Numbers Sr., Boise, Idaho; Eclectic Medical Institute, Cincinnati, 1885; member, past president and secretary of the Idaho State Medical Association; formerly member of the state examining board; fellow of the American College of Surgeons; at one time mayor of Weiser; on the staff of St. Alphonsus Hospital; aged 77; died, February 17.

Charles Knauss Reinke, Jamestown, N. D.; University of Pennsylvania School of Medicine, Philadelphia, 1917; member of the American Psychiatric Association and the New England Society of Psychiatry; served during World War I; aged 50; died, March 12, in the Hospital of the University of Pennsylvania, Philadelphia, of acute yellow atrophy of the liver.

Joseph Oswald Marien, Lewiston, Maine; University of Montreal Faculty of Medicine, Montreal, Que., Canada, 1924; member of the Maine Medical Association; at one time assistant superintendent of the Western Maine Sanatorium, Greenwood Mountain; on the staff of St. Mary's Hospital; aged 47; died, March 6, of glioma of the brain.

William Winn Hartwell, Malden, Mass.; Harvard Medical School, Boston, 1900; member of the Massachusetts Medical Society; served as city physician in Malden for several years and as medical examiner of the city board of health; on the staff of the Malden Hospital; aged 67; died, March 2, of coronary thrombosis.

William Benedict Evans ☉ Chester, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1912; fellow of the American College of Surgeons; served during World War I; aged 56; on the staff of the Fitzgerald Mercy Hospital, Darby, and the Chester Hospital, where he died, February 15.

John Hughes Galbraith ☉ Altoona, Pa.; University of Pittsburgh School of Medicine, 1912; fellow of the American College of Surgeons; served during World War I; orthopedic surgeon, Altoona General and Mercy hospitals; orthopedic consultant, Philipsburg State Hospital; aged 55; died, January 28.

William Napoleon Lynn ☉ Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1909; served during World War I; aged 58; on the staffs of the Fort Sanders Hospital, Knoxville General Hospital and St. Mary's Memorial Hospital, where he died, February 2.

Carl Goldmark ☉ New York; Columbia University College of Physicians and Surgeons, New York, 1896; on the staff of the Lebanon Hospital; consulting physician to the Will Rogers Memorial Hospital, Saranac Lake, N. Y.; aged 66; died, February 19, of hypertension and cerebral hemorrhage.

Frederick Alexander Logan, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1920; served during World War I; formerly assistant medical superintendent of the Toronto General Hospital; aged 47; died, February 7, in Niagara Falls of coronary occlusion.

Justin Herold, Scarsdale, N. Y.; Bellevue Hospital Medical College, New York, 1882; formerly professor of medical jurisprudence at the Fordham University School of Medicine, New York; for many years coroner's physician of New York County; aged 81; died, February 3.

H. Maxey Swift, Mount Vernon, Ill.; Physio-Medical College of Indiana, Indianapolis, 1895; member of the Illinois State Medical Society; formerly mayor and member of the state legislature; aged 71; died, February 15, of injuries received in an automobile accident.

John Calvin Hubenthal, Belmont, Wis.; Rush Medical College, Chicago, 1896; member of the State Medical Society of Wisconsin; past president of the Lafayette County Medical Society; formerly member of the county board of education; aged 73; died, January 18.

Charles Percy Charlton, Palmyra, Neb.; Chicago College of Medicine and Surgery, 1913; member of the Nebraska State Medical Association; served during World War I; associate staff member, Bryan Memorial Hospital, Lincoln; aged 55; died, February 18.

Alexander Carleton Potter ☉ Cambridge, Mass.; Harvard Medical School, Boston, 1899; served during World War I; president of the New England Society of Physical Medicine; aged 68; died, January 28, in the Massachusetts General Hospital, Boston.

Romeo Joseph Morin, Lewiston, Maine; Laval University Faculty of Medicine, Quebec, Que., Canada, 1916; member of the Maine Medical Association; served during World War I; on the staff of St. Mary's General Hospital; aged 50; died, February 3.

James Roberts Nankivell, Athens, Tenn.; University of the City of New York Medical Department, 1878; member of the Tennessee State Medical Association; served during World War I; aged 87; died, February 6, in the Forec Hospital of pneumonia.

William Emmett Wishart, Charlotte, N. C.; North Carolina Medical College, Charlotte, 1911; member of the Medical Society of the State of North Carolina; served during World War I; aged 55; died, March 2, of cerebral hemorrhage.

John Albert Martin, Indianapolis; Medical College of Indiana, Indianapolis, 1894; veteran of the Spanish-American War and World War I; aged 72; on the staff of the Methodist Hospital, where he died, February 19.

Herbert Jerome Matthews, Elliott, S. C.; Medical College of the State of South Carolina, Charleston, 1907; member of the South Carolina Medical Association; aged 57; died, February 17, in the Tuomey Hospital, Sumter.

George Tillerie Ross, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1880; member of the American Laryngological, Rhinological and Otological Society; aged 91; died, January 25.

Frank J. Chalaron ☉ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1892; veteran of the Spanish-American War; on the staff of the Mercy Hospital; aged 72; died in January.

Ernst Freund, Boston; Deutsche Universität Medizinische Fakultät, Prague, Austria, 1900; member of the Massachusetts Medical Society; author of a book entitled "Diseases of the Joints"; aged 65; died, February 19.

James Benjamin Wallace, Providence, Ky.; Hospital College of Medicine, Louisville, 1905; member of the Kentucky State Medical Association; member of the county board of health; aged 75; died, January 31.

James Eldred Miller ☉ Huntsville, Ala.; Memphis (Tenn.) Hospital Medical College, 1911; past president of the Madison County Medical Society; on the staff of the Huntsville Hospital; aged 59; died, February 27.

Leonard Dominic Marinaro, Sharon, Pa.; Georgetown University School of Medicine, Washington, D. C., 1926; member of the Medical Society of the State of Pennsylvania; aged 42; died, February 10.

Isaiah Snyder Morris, Detroit; University of Michigan Homeopathic Medical School, Ann Arbor, 1886; served during World War I; aged 77; died, February 15, in the Mount Carmel Mercy Hospital.

George Lawrence Nicholas, New City, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1887; also a clergyman; aged 77; died, February 17.

James E. Nelson, Lodi, Calif.; University of Missouri School of Medicine, Columbia, 1905; member of the California Medical Association; aged 62; died, January 5, in a hospital at Merced.

William Gillmore Booth, Seattle; Baltimore Medical College, 1898; member of the Washington State Medical Association; aged 81; died, February 6, of chronic myocarditis and pneumonia.

Joseph William Allen Goodman, Miss.; Memphis (Tenn.) Hospital Medical College, 1894; Marion-Sims College of Medicine, St. Louis, 1896; aged 71; died, February 4, in Jackson.

Armistead Montgomery Fredlock, Elkins, W. Va.; University of Maryland School of Medicine, Baltimore, 1889; for many years mayor; health officer; aged 75; died, February 15.

Willard Anthony Thompson & **Dixon**, Ill.; Hahnemann Medical College and Hospital, Chicago, 1910; served during World War I; aged 59; died, March 1, of coronary thrombosis.

Walter Scott Lucas, Ventnor, N. J.; Jefferson Medical College of Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; aged 69; died, February 12.

Guy Leslie Herman, Socorro, N. M.; University of Tennessee College of Medicine, Memphis, 1912; member of the New Mexico Medical Society; aged 54; died, January 25.

William Wilmerding Moir & **Minneapolis**; University of Minnesota College of Medicine and Surgery, Minneapolis, 1906; aged 60; died, February 3, of a self-inflicted bullet wound.

Edward F. Hanlon, Hazleton, Pa.; Jefferson Medical College of Philadelphia, 1908; member of the Medical Society of the State of Pennsylvania; aged 69; died, February 23.

Martin Joseph Larkin, Philadelphia; Eclectic Medical College, Cincinnati, 1913; member of the Medical Society of the State of Pennsylvania; aged 70; died, February 9.

Goodall Harrison Wooten, Austin, Texas; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; aged 72; died, January 30.

Thomas Andrew McGrath, Hoosick Falls, N. Y.; Albany Medical College, 1909; served during World War I; formerly county coroner; aged 54; died, February 10.

Robert A. Pogue, Covington, Va.; Meharry Medical College, Nashville, Tenn., 1918; aged 56; died, January 10, in the Chesapeake and Ohio Hospital, Clifton Forge.

Abe Bethel Penn, Alexandria, Va.; Howard University College of Medicine, Washington, D. C., 1902; aged 64; died, January 15, at his home in Washington, D. C.

John Medicus Cullum, Nashville, Tenn.; University of Nashville Medical Department, 1905; formerly member of the board of education; aged 71; died, February 17.

Marion U. Thomas, Weeping Water, Neb.; University Medical College of Kansas City, Mo., 1897; aged 76; died in February at Lincoln of coronary thrombosis.

Albert Schupmann, Chicago; Homeopathic Medical College of Missouri, St. Louis, 1897; member of the Illinois State Medical Society; aged 79; died, January 25.

Cary S. McCafferty, Columbus, Ohio; Columbus Medical College, 1890; member of the Ohio State Medical Association; aged 73; died, February 7, of heart disease.

Samuel Edward Lynch, Olyphant, Pa.; Jefferson Medical College of Philadelphia, 1887; formerly superintendent of the Blakely Home; aged 80; died, January 25.

Frank S. Hargrave, Orange, N. J.; Leonard Medical School, Raleigh, N. C., 1901; for many years member of the state legislature; aged 68; died, March 11.

Ettore Tresca & **New York**; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1892; aged 74; died, January 15, in the Park West Hospital.

W. Johnson Strother, Culpeper, Va.; Medical College of Virginia, Richmond, 1871; member of the Medical Society of Virginia; aged 92; died, February 15.

George Mathes, Kiel, Wis.; Chicago Homeopathic Medical College, 1904; for many years health officer; aged 69; died, February 19, of military tuberculosis.

Jesse A. Clifton, Beaufort, S. C.; Medical College of the State of South Carolina, Charleston, 1896; aged 68; died, January 6, in a hospital at Walterboro.

Leslie Bryce Stockslager, Lewiston, Idaho; Barnes Medical College, St. Louis, 1908; aged 57; died, February 17, in Clarkston, Wash., of heart disease.

Charles Francis McNevin & **St. Paul**; Northwestern University Medical School, Chicago, 1908; aged 64; died, February 16, in St. Joseph's Hospital.

Cranz Nichols & **Maxwell**, Texas; University of Texas School of Medicine, Galveston, 1913; served during World War I; aged 53; died, January 6.

Ralph Waldo Emerson Bledsoe, Los Angeles; Meharry Medical College, Nashville, Tenn., 1915; served during World War I; aged 46; died, January 25.

Walter Raleigh Breeding, Marysville, Kan.; Rush Medical College, Chicago, 1892; member of the Kansas Medical Society; aged 77; died, January 9.

Giovanni Castaldi, Providence, R. I.; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1923; aged 42; died, Dec. 12, 1941, in Boston.

William Laban Moore, St. Louis; Barnes Medical College, St. Louis, 1899 and 1907; aged 67; died in February at the Missouri Baptist Hospital.

Theodore A. Nichols, Mission San Jose, Calif.; University of California Medical Department, San Francisco, 1885; aged 80; died, January 16.

James Robert George, Fredonia, Texas; University of Tennessee Medical Department, Nashville, 1897; aged 67; died, February 4, of endocarditis.

Thomas Lucius Shaffner, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1889; aged 79; died, January 3.

Iva Seal Thompson, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1902; died, February 17, in the Woman's Hospital.

Leo Francis Driscoll, Brookline, Mass.; Georgetown University School of Medicine, Washington, D. C., 1929; aged 40; died, Dec. 20, 1941.

Mark Clyde Jones, Joliet, Ill.; Marion-Sims College of Medicine, St. Louis, 1898; served during World War I; aged 70; died, February 10.

David Leslie Lowry, Teague, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1906; aged 62; died, February 7.

Mahlon William Loeke, Williamsburg, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1905; aged 61; died, February 7.

Joseph Stevenson, Louisville, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1901; aged 81; died, January 28.

George Jordan Mehler & **Lynbrook**, N. Y.; University and Bellevue Hospital Medical College, New York, 1924; aged 40; died, February 1.

J. Walter Carryer, Columbia, Mo.; Cincinnati College of Medicine and Surgery, 1878; aged 87; died, February 9, of chronic bronchitis.

Lewis Alfred Querner, Toledo, Ohio; Medical College of Ohio, Cincinnati, 1909; served during World War I; aged 54; died, January 31.

Alexander Leslie Marshall & **Harrisburg**, Pa.; Medico-Chirurgical College of Philadelphia, 1910; aged 52; died, February 2.

Edwin H. Jones, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1889; aged 79; died, January 21.

Berry W. Fite & **Resaca**, Ga.; Southern Medical College, Atlanta, 1887; aged 79; died, January 13, of coronary occlusion.

William Lewis Elmore, Frankfort, Ky.; College of Physicians and Surgeons, Baltimore, 1883; aged 85; died, January 11.

Paul Louis Gailmard, Ekalaka, Mont.; Emory University School of Medicine, Atlanta, 1926; aged 39; died, January 13.

William Ivanhoe Kinsley, San Diego, Calif.; Bennett Medical College, Chicago, 1909; aged 63; died, January 27.

John McAllister, New York; Albany Medical College, 1879; aged 90; died, February 6, at his home in Scarsdale.

John Francis Oslin, Providence, R. I.; Tufts College Medical School, Boston, 1920; aged 46; died, February 7.

Thomas F. Brady, Detroit; Detroit College of Medicine, 1903; aged 63; died, January 31, of coronary thrombosis.

Rolla Beatty Fore, Blanchard, Pa.; Baltimore University School of Medicine, 1898; aged 64; died, February 21.

Charles H. Hodson, Vacaville, Calif.; Eclectic Medical Institute, Cincinnati, 1881; aged 85; died, January 14.

William Joseph Sullivan, Baltimore; Maryland Medical College, Baltimore, 1901; aged 71; died, January 30.

Bureau of Investigation

SCIENTIFIC (SIC) MANUFACTURING COMPANY, INC.

Actions of Various Federal Agencies Against the Concern and Its President, Howard J. Force

From Scranton, Pa., the Scientific Manufacturing Company, Inc., with a Howard J. Force as president, sold through the mails a nostrum called "Dialin." It was promoted as a remedy for diabetes with the promises "New achievement, DIALIN, reduced sugar and thirst. Widely used . . . Modified diet. No needle." Such claims, of course, implied that a diabetic patient could give up insulin and substitute Dialin. Those who answered the advertisement received extensive literature including testimonials from lay users as well as from osteopaths, chiropractors, and one doctor of medicine. According to the directions one was to take a teaspoon of the preparation in a little water after meals. Also when the sugar had been reduced to normal the dose was to be cut down one half for about four weeks. Then too there were furnished "suggestions to those using Dialin." These were to the general effect that aluminum and aluminum baking powder should not be used; that brown sugar, molasses, honey, cracked wheat or whole wheat bread should be taken and saccharin and pasteurized milk should be avoided. The purchaser was advised to eat the things that he knew would agree with him, but nothing was said to help one determine which foods would agree with him.

As the scheme appeared to the Post Office Department to be a means of obtaining money through the mails on false and fraudulent pretenses, representations and promises, that agency on Feb. 17, 1941 ordered the promoters to show cause on March 13 why their business should not be debarred from the mails. After several postponements the hearing took place on April 30 and H. J. Force appeared with his attorney. At the hearing it was brought out that Dialin had been offered to the public under the representations that when used as directed it would quickly overcome and relieve the "weak and tired feeling" and "that great thirst" common to the diabetic; that Dialin, when used as directed by any person in the advanced stages of diabetes, would completely normalize or materially reduce the sugar content of both blood and urine, remove the cause of diabetes and cure this condition, besides being an effective substitute and eliminating the necessity for insulin injections.

The defendants' answer denied these charges and alleged in substance that all their claims for Dialin were true and correct and that they had not knowingly misrepresented it in any way but had attempted to make clear to all prospective purchasers that the thing was not a cure for diabetes. H. J. Force testified that he had developed Dialin and had experimented with it for about two years before placing it on the market in 1936. The reason for its development, he said, was the necessity for providing a friend, who was diabetic and refused to take insulin, with a preparation which would help her control her condition. Force admitted that except for his training obtained in the New Jersey College of Pharmacy and his subsequent practical experience in the field of chemistry he had no specialized knowledge of medicine.

A qualified chemist who appeared for the government at the hearing testified that his analysis of Dialin showed that each teaspoon of it contained 2.16 grains of magnesium carbonate, 3.48 grains of sodium bicarbonate, 14.9 grains of glycerin, 3.372 grains of plant material including rhubarb and ipecac, 0.32 grain of peppermint, 0.925 grain of alkaloids, 0.01 grain of iron, a small amount of alcohol and traces of phosphate, citrate and calcium. Substantially the same information appeared on the Dialin label.

Another government witness was a physician who specializes in the treatment of diabetes and lectures on that subject in a leading medical school. His testimony covered the causes and symptoms of this disease and outlined its scientific treatment. From this standpoint he showed that the use of a "patent medicine" like Dialin is utterly discredited as a treatment for diabetes. Force attempted to refute the physician's testimony

by presenting that of a lay user of Dialin and testimonial letters of a doctor of medicine and several osteopaths and chiropractors. These testimonials, however, failed to state the dietary restrictions observed by the respective patient at the time that Dialin was being used or else did state that the patient had observed a certain prescribed diet.

As Force was unable to disprove the charges brought against him, the Post Office on Aug. 16, 1941 issued a fraud order debarring the Scientific Manufacturing Company, H. J. Force, president, and their officers and agents from the mails. Force, however, like some other promoters of mail order medical fakes, did not discontinue his scheme but simply changed its trade style, operating under the name Howard Force and continuing to send out literature similar to that revealed by the government's earlier investigation. He advised his correspondents that the product would be shipped by Howard Force by express and that the purchaser should not remit by postoffice money order in payment but should send cash, express order or check. When the Post Office discovered this evasion it issued a supplementary fraud order against the name of Howard Force under date of Oct. 10, 1941.

Incidentally, two additional government agencies have taken action against Force or the concern with which he is connected. In March 1933 the Food and Drug Administration seized a consignment of "Menno" that had been shipped in interstate commerce by the Scientific Manufacturing Company, Inc., and charged that the label bore false and fraudulent claims as to its curative effect on indigestion, "gas condition" and ptomaine poisoning, among other things. Government chemists reported that it consisted essentially of plant drugs including a laxative with glycerin, alcohol and water, small amounts of sodium and magnesium carbonates and a trace of ipecac alkaloids. As the company neither put up a defense nor claimed the property, the latter was confiscated.

Similar charges were made against another interstate consignment of Menno shipped around the same time with a quantity of "Pheno-Isolin," another of the concern's products. The government charged that the labels of Pheno-Isolin bore false and fraudulent representations, such as that it is effective to prevent and destroy infection and to act as a local antitoxin. According to a government chemist, Pheno-Isolin was found to be nothing more wonderful than a mixture consisting essentially of turpentine, camphor, menthol and resin dissolved in an oil and would require many hours of contact with bacteria before exerting any germicidal action. Tests also showed that it was not an antitoxin. In this case, tried in a district federal court, the defendants entered pleas of *nolo contendere* and the court imposed a fine of \$30.

Another seizure of a shipment of Pheno-Isolin in interstate commerce was made in August 1933 on charges similar to those already mentioned, and since the Scientific Manufacturing Company, Inc., made no reply in this case the consignment was confiscated by the court.

On April 30, 1938 another government agency, the Federal Trade Commission, announced that as the result of a complaint that it had brought against the Scientific Manufacturing Company, Inc., that concern had signed a stipulation in which it promised the Commission to discontinue on its labels or in its advertising matter misrepresentations to the effect that Pheno-Isolin possesses antitoxic properties or acts as a "sure" germicide when used in connection with the treatment of certain maladies or that, when used as directed, the product destroys infection, dissolves all kinds of bacteria or does a few other things.

In April 1941 the Commission took further action against the Scientific Manufacturing Company, Inc., and Howard J. Force by issuing a complaint against them for representing that "Pheno-Isolin" and "Pheno-Isolin Ointment" constitute competent antiseptics and germicides and possess substantial therapeutic value in treating skin infections generally. Some twenty specific ailments or conditions, including ulcers, carbuncles, abscesses, diphtheria and influenza, were mentioned as disorders for which the products in question were excessively recommended. At the same time the Commission also charged the respondents with representing that their Dialin constitutes a remedy and effective treatment for diabetes and benefits a

diabetic person in various specific ways. The complaint further was directed against testimonials in the advertising matter which were alleged to have been written by physicians. According to the complaint, the respondents' preparations are not used or recommended by the medical profession generally. Shortly afterward Force and his concern replied with a general denial of the charges, and it appears that the case has not yet been concluded.

On Feb. 1, 1941 the Commission reported that it had ordered the Scientific Manufacturing Company, Inc, and its president, Howard J. Force, to discontinue misrepresentations contained in the pamphlets entitled "Poisons Formed by Aluminum Cooking Utensils" and "Are You Heading for 'The Last Round-Up'?" These were to the effect that food prepared or stored in aluminum utensils is unsafe, deleterious, disease producing, poisonous or otherwise dangerous to the health. Subsequently, however, according to *Editor and Publisher* for Jan. 17, 1942, the United States Circuit Court set aside the Cease and Desist order, ruling that, since the Scientific Manufacturing Company and H. J. Force do not make cooking utensils of nonaluminum material and hence no competition exists between them and manufacturers of aluminum cooking utensils, the antialuminum pamphlets mentioned merely represent statements of opinion rather than unfair trade practice.

Howard J. Force has long been one of those who have promoted the preposterous propaganda against aluminum cooking utensils. He has cited as sponsors of his cause a list of alleged physicians. When their names were looked up it was found that few of them were doctors of medicine; many were already in the Bureau of Investigation's quackery files for other professional irregularities. Additional representatives of the anti-aluminum following are reported to have given testimonials for Pheno-Isolin, including Charles T. Betts of Toledo, an early leader in the movement, the questionable Koch Laboratories of Detroit, promoters of a "cancer cure," and the utterly quackish Baker cancer outfit. The latter, once at Muscatine, Iowa, but in its final days at Eureka Springs, Ark., seems to have closed up shop since the government sent its promoter, Norman Baker, to prison in 1941 for conducting a mail order fraud.

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of *THE JOURNAL*. Following are brief abstracts of some fraud orders not dealt with previously.

Esselstein's "Cancer Cure."—From Spokane, Wash., one W. C. Esselstein, using "N.D." after his name, put out a treatment that he variously called "W. C. Esselstein's Internal Cancer Formula Soluble Organic Food" and "Esselstein's American Herb Formula." The Post Office investigation disclosed that he advertised it through the mails by means of small cards that recommended it "for treating all internal and external cancers, fibroid tumors, stomach ulcers, arthritis and abdominal diseases" and that he represented that it had cured him of an internal cancer and would do as much for others. In one of his follow up letters to an inquirer, it was reported, he claimed that it would restore users to "health even after they were considered beyond medical aid," and that it could safely be used by any one. With the treatment went certain dietary instructions and a warning against the use of aluminum cooking utensils. According to the Post Office memorandum on the case, Esselstein claimed that his nostrum consisted of cascara bark, senna leaves, water pepper, yerba santa, American saffron, bloodroot and water, with sodium benzoate as a preservative, and this composition was indented by the government chemists' analysis. An expert medical witness testified that neither this mixture nor any other would check or eliminate cancerous growths in the body and that, in fact, Esselstein's nostrum, by its irritating effect, might aggravate cancerous conditions and also cause the rupturing of a diseased appendix. The Post Office's findings, therefore, were that Esselstein's scheme amounted to obtaining money through the mails by means of fraudulent pretenses, representations and promises, and a fraud order was accordingly issued on Oct. 15, 1940 debarring it from the mails.

Magie Oil Company and Carl G. Schnepel—"Magic Oil Liniment" also known as "Carl's Magic Oil Liniment" was the product that Carl G. Schnepel, operating from Colorado Springs as the Magie Oil Company, sold through the mails. According to the Post Office memorandum on this case he promoted the product under the false and fraudulent representations that his product would effectively overcome rheumatism, neuritis and arthritis, cure athlete's foot, remove eczema and eradicate colds, sore throat, hay fever and asthma. According to the memorandum, the busi-

ness was started in Omaha in 1933 and after moving to several other places it was established in Colorado Springs in September 1940. Testimonials, of course, were played up in the advertising. When an investigator for the Post Office questioned Mr. Schnepel as to the composition of his liniment, he replied that it contained oils of wintergreen, mustard and eucalyptus, as well as camphor, turpentine, menthol, salicylic acid and acetone. A government chemist found all of these except acetone present in the product. Although Schnepel sent eleven separate communications to the Post Office, in general denying the allegations of fraud, he neither put in an appearance at the hearing on Dec. 20, 1940 nor sent a representative. At this hearing an expert medical witness for the government testified that a mixture such as this liniment is essentially a counterirritant and produces its effects by irritation of the outer layers of the skin. Hence it might offer temporary palliation for the aches and pains incident to some types of arthritis and rheumatism but, as the witness pointed out, "the presence of foci of infection in the body, venereal diseases and other factors are often involved in the onset of rheumatism and arthritis." The findings at the hearing were that the sale of this liniment constituted a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and on Jan. 7, 1941 a fraud order was issued against various forms of the names of Carl G. Schnepel and the Magie Oil Company.

Relivo Products Company.—Under this trade style one Joseph R. Jafferis of Indianapolis sold through the mails three products called "Relivo Salts," "Nervilo" and "Urilavo." The first named was sold under representations that when used as directed it would cure rheumatism, neuritis, gout, lumbago, neuralgia and arthritis and overcome all pains and aches resulting therefrom, besides having no bad effects on the user. A government chemist testified that each tablet of this nostrum (12.5 grains) contained 4.2 grains of acetophenetidin, 4.2 grains of acetylsalicylic acid and 0.33 grain of phenolphthalein. Nervilo Tablets, according to the advertising, were supposed "to represent a balanced formula for the treatment of the nerves," to overcome nervousness, "jitters" and sleeplessness and were represented as a safe and dependable nerve tonic. The chemist testified that each tablet contained 0.3 gram of phenobarbital, a trace of mydrinate alkaloid and, for the rest, mostly powdered kaolin and a small amount of powdered okra. Urilavo was represented to overcome and prevent gallstones and correct the cruse of biliousness, congested liver and dyspepsia and restore a free flow of bile and proper intestinal and gastric digestion. The same chemist reported that this nostrum contained small amounts of emodin, bile salts, calcium chloride and phenolphthalein. The Post Office found that the sale of these nostrums constituted a scheme for obtaining money through the mails under false and fraudulent pretenses and on Oct. 16, 1940 debarred the Relivo Products Company from further use of the mails.

T. J. Hutton, M.D.—On July 25, 1940 the Post Office Department served notice on T. J. Hutton, M.D., of Powers, Mich., to show cause, at a hearing to be held on September 3, why a fraud order should not be issued against him for soliciting remittances of money through the mails for an alleged treatment for tuberculosis. According to the Post Office memorandum Dr. Hutton disparaged the use of surgery and claimed that his treatment was significantly different from and more effective than any methods regularly prescribed by tuberculosis specialists, that it would cure, within one year, practically all cases of tuberculosis including those in the advanced stages; that various medicines he furnished were valuable and effective adjuncts to measures regularly used for tuberculosis and were necessary for the cure of that disease and that by means of information supplied by customers to whom he sent blanks he could correctly diagnose and properly prescribe for all persons suffering from tuberculosis without personally examining them. The memorandum went on to show that Dr. Hutton started this business in 1912 and advertised it in various publications, following up inquiries with form letters. Hutton neither appeared at the government hearing nor sent a representative. A chemist and a microscopist in the employment of the government testified to finding the following composition in Hutton's medicines:

Red Pills In each, essentially 2 grains of creosote, 0.83 gram of acid insoluble material, probably tale, 0.18 gram of iron and about 2 grains of calcium, coating and color.

White Powder (in paper box) Essentially potassium chloride.

Second White Powder Found on microscopical examination to contain finely ground bone (including some calcium carbonate), also material closely resembling precipitated calcium phosphate.

Granular White Powder. Essentially sodium chloride and moisture.

Colorless Liquid Essentially an aqueous solution containing 0.94 per cent of solid material, mostly sodium chloride and about 0.08 per cent of phenol.

Second Colorless Liquid An aqueous solution containing 2.22 per cent of solid material, mostly sodium chloride and about 0.09 per cent of phenol.

These products were to be taken internally, some to be sprinkled on the food, others to be consumed in doses before meals and the liquids to be injected under the skin by means of a hypodermic needle. An expert medical witness testified for the government on the different forms of tuberculosis and the scientific treatment thereof and showed that under Hutton's method the patient was deprived not only of a physician's personal examination and care but also of any opportunity for surgical measures, both of which, the expert witness pointed out, are essential to successful treatment of many cases of tuberculosis. He also brought out that the chart supplied by Dr. Hutton to his mail-order "patients" is not a correct guide to follow for proper diagnosis and treatment, nor would the combination of the Hutton medicines constitute a scientific treatment for tuberculosis. Accordingly, the Post Office Department on Sept. 21, 1940 debarred Hutton's scheme a fraud and debarred it from the mails.

Correspondence

SURGERY FOR CANCER OF
THE PROSTATE

To the Editor:—In *THE JOURNAL*, March 7, page 855, there is a statement with regard to cancer of the prostate. In the first paragraph of the reply to the question it is stated that:

It is the opinion among urologists that once the diagnosis of carcinoma of the prostate has been made it is technically impossible to do any sort of surgical procedure that would effect a cure. Once the diagnosis of carcinoma of the prostate has been definitely made, the condition is no longer surgical.

Undoubtedly the opinion that is expressed is held by a large proportion of urologists, chiefly those who have never done a perineal prostatectomy. A small but steadily increasing number have become convinced of the soundness of Hugh Young's teachings concerning the value of total perineal prostatectomy for selected cases of early prostatic cancer. Frank Hinman, Alexander Randall and Roy Henline are among the men who believe this operation worth while.

This is not the occasion for a lengthy review of the results obtained by various operators. It may be enough to point out that 1 of Young's patients lived twenty-five years after operation without evidence of recurrence and that of 38 patients with favorable prognosis 50 per cent lived five years or more after operation without evidence of recurrence or metastasis.

"One patient died less than five years after operation of another disease. A careful autopsy showed no recurrence or metastases." (Young H. H.: *Surg., Gynec. & Obst.* 64:472 [Feb.] 1937).

In my own series of around 80 patients, there are 2 alive and well thirteen years after operation, and at least 25 are living from one to twelve years after prostatectomy. The prostate of the last patient operated on, carefully sectioned after its removal, proved to contain but one focus of adenocarcinoma. This nodule was 1 cm. in diameter but, as is usually the case, it was situated close to the periphery of the gland and could easily be detected on rectal palpation. As proof of the fact that no superhuman diagnostic acumen is required for the recognition of these cases, let me say that a considerable proportion of the early cases have been referred to me by internists who have discovered suggestive prostatic nodules on routine rectal examination.

There is no certainty of obtaining a cure in any case of cancer, no matter what organ is involved. The percentage of probable cures achieved by total prostatectomy in my own series is around 25 per cent, but with the newer methods of treating prostatic cancer it seems reasonable to expect that, even if the growth develops elsewhere, from metastases which had taken place before operation, it may be controlled by castration and the administration of diethylstilbestrol.

The statement says "Once the diagnosis of carcinoma of the prostate is definitely made, the condition is no longer surgical." The diagnosis of any cancer can be made "definitely" only by microscopic examination of the tissue. Even this criterion can be fulfilled, in the case of prostatic cancer, by a biopsy of the suspected area after the prostate has been exposed by a perineal approach. This is done frequently in cases of early involvement, and if the report is positive total prostatectomy is then performed.

The fact that there are not many urologists well enough trained in the perineal approach to perform total prostatectomy does not justify the statement that the operation cannot be done. I regret to say that *THE JOURNAL* is misinformed with regard to the treatment of early cancer of the prostate.

GEORGE GILBERT SMITH, M.D., Brookline Mass.

LOCAL USE OF SULFONAMIDE
COMPOUNDS

To the Editor:—The article by Dr. Frederic W. Taylor on the misuse of sulfonamide compounds, which appears in the March 21 issue of *THE JOURNAL*, paints a discouraging picture with regard to the local use of these drugs. Although his experimental observations are no doubt true, from a practical point of view and experience with the clinical use of these drugs, the advantages of their local use, it seems to me, far outweigh the disadvantages. I have recently been interested in the use of sulfathiazole prepared in the microcrystalline form. The details of the preparation will be reported elsewhere. I wish to state here, however, that the crystals are of uniform size and are extremely small. The advantage of this type of preparation is the fact that a considerably greater surface exposure is permitted so that the drug, although no more soluble, goes into solution more readily.

When the material is applied with an insufflator into fresh traumatic wounds or operative wounds in which infection might be expected, as for instance in closure of a colostomy, the wounds heal without any apparent inflammatory reaction. Although Dr. Taylor has reported the finding of abscesses around sulfathiazole crystals in wounds my experience has been exactly the reverse. The wounds heal primarily without serum or inflammatory reaction, and I have not had 1 single case in which there was any evidence of the formation of an abscess. As a matter of fact, the results that I have obtained in cases in which wounds were closed and in which a definite infection was to be expected were remarkable. I now feel so confident about the use of this drug that I have closed numerous colostomies without drainage and have had no instance of infection developing.

As to the use of the sulfonamide drugs in the abdomen, I have had an interesting experience, both clinically and experimentally, concerning this question. There is no doubt that the application of a powdered drug, especially the powdered insoluble drugs such as sulfathiazole or sulfadiazine, does produce a local conglomeration of the drug with some peritoneal reaction and a foreign body type of reaction. The microcrystalline preparation can be suspended in saline solution in a strength of 10 or 20 per cent. This forms a material much like magma magnesiae, which remains in suspension and which can be injected through a syringe. When introduced into the abdomen there is general spreading of the drug throughout the abdominal cavity, and I have not found a single instance of any evidence of a peritoneal irritation when the abdomen in experimental animals was examined five to seven days after the implantation of the drug. In clinical usage also the drug has proved to be extremely valuable, and there has been no evidence of any peritoneal irritation, although I have not had an opportunity to examine an abdomen after the use of the drug.

I agree with Dr. Taylor in his suggestion that the use of the sulfonamides locally is unnecessary in routine incisions which are made for clean operations. On the other hand, I am of the opinion that the local use of these drugs, especially the microsulfathiazole preparation, in contaminated wounds and in traumatic lesions offers the maximum of protection against infection. Sulfathiazole is of more value than sulfanilamide in this respect in that it remains in the wound for a longer period and so exerts a longer action (three to four days). Furthermore, its effectiveness seems to be greater against a wider range of organisms than does the more soluble sulfanilamide.

L. KRAEER FERGUSON, M.D., Philadelphia.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO, Feb 15-16, 1943 Sec, Council on Medical Education and Hospitals, Dr H G Weiskotten 533 North Dearborn Street, Chicago

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, April 18, page 1398

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16-18 Acting Sec, Dr B F Austin, 519 Dexter Ave., Montgomery

ARKANSAS * Medical Little Rock, June 4-5 Sec, Dr D L Owens, Harrison Electric Little Rock, June 4-5 Sec, Dr Clarence H Young, 1415 Mam St., Little Rock

CALIFORNIA Written San Francisco, June 29-July 2 Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, May 20 Sec, Dr Charles B Pinkham, 1020 N St., Sacramento

DELAWARE Dover, July 14-16 Sec, Medical Council of Delaware, Dr Joseph S McDaniel, 229 S State St., Dover

FLORIDA * Jacksonville, June 22-23 Sec, Dr William M Rowlett, Box 786, Tampa

GEORGIA Atlanta, June Sec, State Examining Boards, Mr R C Coleman, 111 State Capitol, Atlanta

HAWAII Honolulu, July 13-16 Sec, Dr James A Morgan, 55 Young Bldg., Honolulu

ILLINOIS Chicago, June 23-25 Superintendent of Registration, Mr Philip M Harman Department of Registration and Education, Springfield

INDIANA Indianapolis, June 16-18 Sec, Board of Registration and Examination, Dr J W Bowers, 301 State House, Indianapolis

IOWA * Iowa City, May 11-13 Dir, Division of Licensure and Registration Mr H W Grefe, Capitol Bldg., Des Moines

KANSAS Kansas City, June 2-3 Sec, Board of Medical Registration and Examination, Dr J F Hassig, 905 N Seventh St., Kansas City

KENTUCKY Louisville, May 27-29 Sec, State Board of Health, Dr A T McCormack, 620 S Third St., Louisville

MARYLAND Medical Baltimore, June 9-12 Sec, Dr John T O'Mara, 1215 Cathedral St., Baltimore Homeopathic Baltimore, June 16-17 Sec, Dr John A Evans, 612 W 40th St., Baltimore

MICHIGAN * Ann Arbor and Detroit, June 3-5 Sec, Board of Registration in Medicine, Dr J Earl McIntyre, 2024 Hollister Bldg Lansing

MISSISSIPPI Jackson, June 24-25 Assistant Sec, State Board of Health, Dr R N Whitfield, Jackson

MISSOURI St Louis, June 4-6 Sec, Board of Health Dr James Stewart, State Capitol Bldg., Jefferson City

NEW JERSEY Trenton, June 16-17 Sec, Dr Earl S Hallinger, 28 W State St., Trenton

NEW YORK Albany, Buffalo New York and Syracuse, June 22-25 Chief Bureau of Professional Examinations, Mr Herbert J Hamilton, 315 Education Bldg., Albany

NORTH CAROLINA Raleigh, June 15 Sec, Dr W D James, Hamlet

NORTH DAKOTA Grand Forks, July 7-10 Sec, Dr G M Williamson, 4½ S Third St., Grand Forks

OHIO Written Columbus, June Sec, Dr H M Platter, 21 W Broad St., Columbus

OKLAHOMA * Oklahoma City, June 3-4 Sec, Dr James D Osborn Jr., Frederick

OREGON * Portland, July 22-24 Application must be on file not later than July 9 Exec Sec, Miss Lorraine M Conlee, 608 Failing Bldg., Portland

PENNSYLVANIA Philadelphia and Pittsburgh, July Act Sec Bureau of Professional Licensing, Mrs Marguerite G Steiner, 358 Education Bldg., Harrisburg

SOUTH CAROLINA Columbia, June 22-24 Sec, Dr A Earle Boozer, 505 Saluda Ave., Columbia

SOUTH DAKOTA * Pierre, July 21-22 Dir, Medical Licensure, Dr J F D Cook State Board of Health Pierre

UTAH Salt Lake City, June 29-30 Assistant Dir, Department of Registration, Mr G V Billings, 324 State Capitol Bldg., Salt Lake City

VERMONT Burlington, June 16-18 Sec, Board of Medical Registration Dr F J Lawless Richford

VIRGINIA Richmond, June 17-20 Sec, Dr J W Preston, 30½ Franklin Rd., Roanoke

WISCONSIN * Milwaukee, June 30-July 3 Sec, Dr H W Shutter, 425 E Wisconsin Ave., Milwaukee

WYOMING Cheyenne, June 1-2 Sec, Dr M C Keith, Capitol Bldg., Cheyenne

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT June 13 Address State Board of Healing Arts, 1945 Yale Station, New Haven

FLORIDA Gainesville, June 8 Sec, Professor J F Conn, John B Stetson University, De Land

MICHIGAN * Ann Arbor and Detroit, June 12-13 Sec, Miss Eloise LeBeyec 101 N Walnut St Lansing

NEBRASKA Omaha, May 5-6 Dir Bureau of Examining Boards, Mrs Jennette Crawford, 1009 State Capitol Bldg., Lincoln

NEW MEXICO * Springfield, June 12 Sec, Miss Pia Joerger, State Capitol Santa Fe

OKLAHOMA Oklahoma City, May 15 Sec, Dr Oscar C Newman, Shattuck

OREGON Corvallis, July 11 Application must be on file not later than June 24 Sec, Mr Charles D Byrne University of Oregon, Eugene

RHODE ISLAND Providence, May 20 Chief Division of Examiners, Mr Thomas B Casey, 366 State Office Bldg Providence

SOUTH DAKOTA Vermillion, June 5-6 Sec, Dr G M Evans Yankton

WISCONSIN Milwaukee, June 6 Sec, Prof Robert N Bauer 344 W Wisconsin Ave Milwaukee

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Interns Are Not "Students."—The petitioner, and others on whose behalf he sued having completed a medical course and received a degree from an accredited medical school, was serving an internship in a New York hospital supported wholly or partly at public expense. Section 150 of the Election Law of the state provides, among other things, that an eligible voter must have been an inhabitant of the state for the preceding year, a resident of the county for four months and a resident of the election district for thirty days. Section 151 provides that "for the purpose of registering and voting no person shall be deemed to have gained or lost a residence . . . while a student of any seminary of learning, nor while being kept at any almshouse, or other asylum, or institution wholly or partly supported at public expense or by charity. . . ." Contending, in effect, that the petitioner was either a "student" or a "kept" person within the meaning of section 151 and hence, apparently, not a resident of the county in which the internship was being served, the commissioners of election of the county of Monroe refused to accept his registration as a voter. Accordingly the petitioner, on behalf of himself and all others similarly situated, applied to the supreme court, Monroe County, New York, for an order directing the commissioners to accept the registration of himself and of the others.

The supreme court said that there is a difference between "students" and "interns." The medical practice act, it was pointed out, defines students as persons who are "matriculated and enrolled in medical school," although they are permitted to perform some functions in hospitals. An intern, on the other hand, has already completed his medical course and is serving on the resident staff of the hospital. The petitioner, as an intern, received no wages but he did receive room, board and maintenance and was on day and night call at the hospital. That was far different, said the court, from the freedom normally associated with student life. The supreme court also held that the petitioner was not "kept" within the meaning of the law. He was not a beneficiary of the charity of a publicly supported hospital but was working for the hospital under a written contract. The court therefore ordered the commissioners and inspectors of elections to register the petitioner and others on compliance with the statutory requirements of the election law.—*Rathbun v Smith*, 23 N Y S. (2d) 95 (N Y, 1940)

Charitable Hospitals: Liability for Tort Conditioned on Liability for Taxation.—While the plaintiff was a pay patient in the defendant hospital, a charitable institution, she received injuries due to the alleged negligence of the defendant's servants in applying a hot pad. In a subsequent suit against the hospital, the plaintiff recovered a judgment in the trial court. This judgment was affirmed by the court of appeals with the modification that none of the defendant's property which was held in trust and was being used for charitable purposes might be subjected to satisfaction of the judgment. From this judgment the defendant appealed to the Supreme Court of Tennessee.

The evidence disclosed that the defendant corporation owned, in addition to the hospital plant and equipment, a nurses' training school, a large office building, a retail drug store, an interest in a surgical supply house, and a farm valued at \$200,000. The total income derived by the hospital from these properties exceeded \$230,000 annually. The hospital itself received both charity and pay patients, and other buildings on the hospital premises afforded hotel accommodations, including room and meals, to friends and relatives of patients. The defendant contended, in effect, that it was immune from tort liability because of its charitable nature, that all of its income from whatever source, was devoted to hospital purposes—was property held in trust for the benefit of a charitable institution—and that therefore none of its property was subject to levy.

in satisfaction of the judgment. The Supreme Court held that, according to the Tennessee law, a judgment could be rendered against a charitable institution when it appeared that satisfaction therefor could be had without encroaching on property devoted strictly to trust purposes. Furthermore, that the immunity of such property depended on its direct and exclusive use in the operation of the trust. The court noted an analogy between the exemption of a charitable institution from taxation and its immunity from liability for tort. In 1935 the legislature redefined the tax exemption of charitable organizations by providing that they were exempt from taxation only to the extent that their property was used exclusively for charitable purposes. The court said that a similar rule should be applicable to a case of this nature and that property exempt from tax liability should also be exempt from tort liability. Since it was clear to the Supreme Court in this case that the defendant did own property of great value which was subject to taxation, it was evident that a judgment could be satisfied out of that property without resorting to, or impairing, trust assets. The judgment for the plaintiff was accordingly affirmed—*Baptist Memorial Hospital v. Coullens*, 140 S. W. (2d) 1088 (Tenn., 1940).

Insanity: Liability of Physician for Certifying to Insanity When Appointed by Court.—In this case, a county court commissioner, in accordance with procedure authorized by statute, appointed two physicians to examine the plaintiff and report to the court as to her mental condition. The physicians found her insane and so reported to the court. On the strength of that report, the plaintiff was committed to an asylum. Subsequently she sued the commissioner, the two physicians and another for malicious prosecution. The trial court sustained demurrers interposed by the defendants and the plaintiff appealed to the Supreme Court of Minnesota.

In affirming the action of the trial court, the Supreme Court pointed out that a judge is not liable in a civil action to any one for his judicial acts, however erroneous or by whatever motives prompted, that the physicians were quasi-judicial officers and that what they did was in the scope of their duties as such. That being so, these physicians, the Court concluded, were within the protection of the rule and immune from suit—*Linder v. Foster et al*, 295 N. W. 299 (Minn., 1940).

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, N. J., June 8-12. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Association for the Study of Allergy, Atlantic City, N. J., June 8-9. Dr. J. Harvey Black, 1403 Medical Arts Bldg., Dallas, Texas, Secretary.

American Association for the Study of Gonor, Atlanta, Ga., June 1-3. Dr. Thomas C. Davison, 478 Peachtree St. N.E., Atlanta, Ga., Secretary.

American Association for the Surgery of Trauma, Boston, June 4-6. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., May 3-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Boston, May 13-16. Dr. Neil A. Dayton, 100 Ashua St., Boston, Secretary.

American Broncho-Esophagological Association, Atlantic City, N. J., June 8-9. Dr. Paul H. Holinger, 700 North Michigan Blvd., Chicago, Secretary.

American College of Chest Physicians, Atlantic City, N. J., June 6-8. Dr. Paul H. Holinger, 500 North Dearborn St., Chicago, Secretary.

American Dermatological Association, Hot Springs, Va., May 31-June 4. Dr. Harry R. Forster, 208 East Wisconsin Ave., Milwaukee, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 8-9. Dr. J. Arnold Bargen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Gynecological Society, Skipton, Pa., June 15-17. Dr. Howard C. Taylor Jr., 842 Park Ave., New York, Secretary.

American Heart Association, Atlantic City, N. J., June 5-6. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Human Serum Association, Atlantic City, N. J., June 8. Dr. Maurice Hardgrove, 3121 North Maryland Ave., Milwaukee, Secretary.

American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otolological Society, Atlantic City, N. J., June 1-3. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Atlantic City, N. J., June 6-7. Dr. Adri Chree Reid, 102 East 22d St., New York, Secretary.

American Neurological Association, Chicago, June 4-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Baltimore, June 3-6. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.

American Otological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Triemer, 101 East 73d St., New York, Secretary.

American Pediatric Society, Skipton, Pa., Apr. 30-May 2. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Proctologic Society, Atlantic City, N. J., June 7. Dr. William H. Daniel, 1930 Wilshire Blvd., Los Angeles, Secretary.

American Psychiatric Association, Boston, May 18-22. Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C., Secretary.

American Radium Society, Atlantic City, N. J., June 8-9. Dr. Axel A. Arneson, 4952 Maryland Ave., St. Louis, Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 4. Dr. Eugene M. Landis, University of Virginia Hospital, Charlottesville, Va., Secretary.

American Society of Clinical Pathologists, Philadelphia, June 5-7. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Therapeutic Society, Atlantic City, N. J., June 5-6. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, New York, June 1-4. Dr. Clyde I. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, Apr. 27-29. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Association for the Study of Internal Secretions, Atlantic City, N. J., June 8-9. Dr. Henry H. Turner, 1200 North Walker St., Oklahoma City, Secretary.

Association of American Physicians, Atlantic City, N. J., May 5-6. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

California Medical Association, Del Monte, May 4-7. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, Middletown, June 3-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Georgia Medical Association of Augusta, Apr. 28-May 1. Dr. E. D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Springfield, May 19-21. Dr. Harold V. Camp, 224 South Main St., Monmouth, Secretary.

Kansas Medical Society, Wichita, May 11-14. Mr. C. G. Munns, 112 West Sixth St., Topeka, Executive Secretary.

Louisiana State Medical Society, New Orleans, Apr. 27-29. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland Medical and Surgical Faculty of Baltimore, Apr. 28-30. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.

Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Medical Library Association, New Orleans, May 7-9. Miss Anna C. Holt, 25 Shattuck St., Boston, Secretary.

Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, P. O. Box 295, Clarksdale, Secretary.

Missouri State Medical Association, Kansas City, Apr. 27-29. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.

National Gastroenterological Association, New York, June 3-5. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Philadelphia, May 6-9. Dr. Charles J. Hatfield, 1790 Broadway, New York, Secretary.

Nebraska State Medical Association, Omaha, May 4-7. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 12-13. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New York Medical Society of the State of New York, Apr. 27-30. Dr. Peter Irving, 292 Madison Ave., New York, Secretary.

New York State Association of Public Health Laboratories, Cooperstown, May 18. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina Medical Society of the State of Charlotte, May 11-13. Dr. Roscoe D. McMillan, P. O. Box 232, Red Springs, Secretary.

North Dakota State Medical Association, Jamestown, May 18-20. Dr. L. W. Larson, 221 Fifth St., Bismarck, Secretary.

Ohio State Medical Association, Columbus, Apr. 28-30. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Pacific Coast Oto-Ophthalmological Society, Portland, Ore., May 11-14. Dr. C. Allen Dicke, 450 Sutter St., San Francisco, Secretary.

Pacific Northwest Medical Association, Portland, Ore., June 17-20. Dr. C. W. Countriman, 407 Riverside Ave., Spokane, Secretary.

Rhode Island Medical Society, Providence, June 3-4. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 2. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

South Carolina Medical Association, Myrtle Beach, May 19-21. Dr. Julian P. Price, 105 West Cheves St., Florence, Secretary.

South Dakota State Medical Association, Sioux Falls, May 13-15. Dr. Clarence E. Sherwood, 107 1/2 Egan Avenue South, Madison, Secretary.

Texas State Medical Association of Houston, May 11-14. Dr. H. E. Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Anesthesiology, New York

3:1-122 (Jan) 1942

- Efficiency of Mixtures of Barium and Calcium Hydroxides in Absorption of Carbon Dioxide in Rebreathing Appliances J. Adriani, New Orleans, and D. H. Batten, Brooklyn—p. 1
- Development of Anesthesia (continued) T. E. Keys, Rochester, Minn.—p. 11
- Effects of Morphine, Atropine and Scopolamine on Human Subjects C. P. Wangeman, Vancouver, Wash., and M. H. Hawk, Madison, Wis.—p. 24
- *Role of Picrotoxin in Treatment of Acute Barbiturate Poisoning R. K. Richards and J. G. Menaker, Chicago—p. 37
- Combined Use of Ephedrine and Epinephrine in Spinal Anesthesia Preliminary Report S. Rochberg and Virginia Appert, New York—p. 49
- *Serial Spinal Anesthesia I. P. Haugen, H. S. Ruth and I. B. Taylor, Philadelphia—p. 52
- The Anesthetist's Interest in Lipiodobronchography R. B. Sommerfield, Los Angeles—p. 61
- Fluid Therapy Before and After Operation J. H. Fine, Beverly, Mass.—p. 65
- Role of Alkaloids of Belladonna Plants in Clinical Anesthesia M. L. Phelps, New York—p. 71
- Massive Atelectasis During Anesthesia Case M. C. Peterson and I. M. Fallon, New York—p. 79

Picrotoxin in Acute Barbiturate Poisoning—Richards and Menaker cite 11 cases of barbiturate poisoning treated with picrotoxin. In 1 case 105 grains (7 Gm.) of soluble phenobarbital and 1,944 mg. of picrotoxin were used, and recovery ensued. Five of the 11 patients died. With the exception of 1 patient who ingested only 18 grains (12 Gm.) of soluble phenobarbital, all of them presented severe poisoning. Published reports on the use of picrotoxin reveal that the authors attribute to the drug an important, frequently a life saving, role. Sudden acute death from respiratory failure due to oral barbiturate poisoning is rare, in fact, most of the patients who die do so two to five days after ingesting the drug. Death is due to general depression, to cerebral edema or to pulmonary complications. Treatment must be directed against these dangerous symptoms and the underlying cause for them removed. Experimental and clinical data indicate that picrotoxin possesses an extremely potent stimulating action on the depressed centers. Picrotoxin in barbiturate poisoning is not a panacea, and its use means neither that the problem is solved nor that other forms of treatment are superfluous.

Serial Spinal Anesthesia—Haugen and his co-workers believe that the term "continuous spinal anesthesia" does not adequately describe Lemmon's technique and suggest "serial [repeated] spinal anesthesia." Their clinical experience, although meager, confirms the belief that the element of control introduced by the method is a definite advantage for many types of operation: the initial dose is smaller, which increases safety; the anesthesia may be maintained over a prolonged period; failure may be prevented in the rare case in which a large dose is required. The disadvantages are largely technical, one of them being that special equipment is required.

Maine Medical Association Journal, Portland

33:1-20 (Jan) 1942

- Medical Queries Answered H. T. Karsner, I. H. Pratt and B. D. Dimeshek, Boston and J. Gottlieb, Lewiston—p. 1
- The More Common Chemical Values and Their Clinical Interpretations Including Chemotherapy Levels J. Gottlieb and M. Chipman, Lewiston—p. 10

New England Journal of Medicine, Boston

226:81-126 (Jan 15) 1942

- Results of Fifteen Years of Cancer Control Program in Massachusetts H. L. Lombard and Frances A. Macdonald, Boston—p. 81
- The National Physicians Committee S. B. Weld, Hartford, Conn.—p. 84
- Value of Auscultation of Abdomen in Intestinal Obstruction N. C. Stevens, Walpole, N. H.—p. 87
- Ewing's Tumor Report of Case Demonstrating Characteristic Periodic Course C. P. Roberts, Boston—p. 90
- Syphilis C. G. Lane and G. M. Crawford, Boston—p. 97

226:127-172 (Jan 22) 1942

- *Salmonella Supestifer Infection in Boston Report of Eleven Cases with Autopsy Findings in Case of Bacterial Endocarditis Due to This Organism, and Study of Agglutination Reactions in This Infection N. E. Goulder, Margaret F. Kingsland and C. A. Jewell, Boston—p. 127
- *Action of Furmethide (Furfuryl Trimethyl Ammonium Iodide) on Bladder in Patients with Urinary Retention Following Surgery on Rectum Preliminary Report J. H. Lipton, S. B. Berser and M. D. Altschuler, Boston—p. 138
- Primary Adenocarcinoma in Meckel's Diverticulum H. L. Albright and J. S. Sprague, Boston—p. 142
- Gynecology Endometriosis J. V. Meigs, Boston—p. 147

Salmonella Supestifer Infection—From their survey of the clinical features of Salmonella supestifer infections it is apparent to Goulder and his collaborators that although the disease tends to follow a course similar to typhoid it may localize in any site. The most frequent sites are the lungs, bones and joints. The infection appears most often when the resistance of the patient is low. Therefore epidemics of S. supestifer infection tend to develop in populations already weakened by starvation and exposure, and the disease often appears sporadically in persons with some chronic disease. This fact may account for the resulting high mortality rate. The authors report the fourth case of endocarditis due to S. supestifer. Except for the bacterial endocarditis, the postmortem observations in their patient, a woman of 58, were the usual ones. The salient features of the 4 cases of proved bacterial endocarditis due to S. supestifer were in 3 endocarditis superimposed on a valve already damaged by rheumatic infection or syphilis, embolic phenomena, a high fever with chills and leukocytosis in all and changing murmurs in 3. The sulfonamide drugs were used in 3 of the 4 patients, but there was no evidence that the drugs had any appreciable effect. Their case of S. supestifer endocarditis prompted the authors to review the occurrence of S. supestifer infection during the last six years as encountered in the clinics cooperating with the Peter Bent Brigham Hospital. There were 10 instances of sporadic infection due to the European type of S. supestifer, 6 occurred in children, 2 in newborn infants and 2 in parturient women. One of the newborn infants died after both bacteremia and meningitis had developed. All the patients had a high fever for eight to thirty-eight days, 8 had positive blood and 3 positive stool cultures. The patient with bacterial endocarditis had positive stool, urine and blood cultures. The composite clinical picture included chills and fever, coryza and pharyngitis, pneumonia, splenomegaly, abdominal pain, vomiting, diarrhea, arthritis, meningitis and bacterial endocarditis. If the bacteremia was uncomplicated the leukocyte count tended to remain low, but, once the infection localized, leukocytosis usually developed. The serum of most of the patients with S. supestifer infection had high agglutination titers which persisted for a few months to six years after the infection subsided. Standard antigens and properly prepared antisera should be used for identifying the various Salmonella organisms.

Furmethide—Lipton and his associates observed the action of furmethide (furfuryl trimethyl ammonium iodide) given orally and subcutaneously on the bladder of 12 normal subjects and on the atonic bladder of 3 patients after a one stage abdominal operation for adenocarcinoma of the rectum. Its effect was to increase tone and restore atony to or toward normal. The drug effectively controlled the dysfunction of the bladder in the 3 patients. Although side reactions may be appreciable after large doses, it is possible to find an effective dose that does not cause significant disconcerting side effects, such as salivation, sweating, a feeling of warmth and a desire to void.

New Jersey Medical Society Journal, Trenton

39:57-128 (Feb.) 1942

- Responsibility of Medical Profession Toward Political Institutions of Nation. W. P. Eagleton, Newark—p. 68
- Amphetamine (Benzedrine) Sulfate and Thyroid Extract in Treatment of Obesity: Observations on Five Hundred Cases S. W. Kalb, Newark—p. 74
- *Simple Method of Timing Blood Coagulation. C. H. Knauer, Trenton.—p. 75.
- Role of General Practitioner in Appendicitis R. A. Schaaf, Newark.—p. 76.
- Emotional Factor in Bronchial Asthma. J. A. Hauman, New York.—p. 80.
- Relation of General Hospital to Psychiatry. J. B. Gordon, Marlboro.—p. 84.

Timing Blood Coagulation.—Knauer outlines a method for determining the coagulation time of the blood. He recommends the use of a hypodermic syringe with a slightly larger needle than is used ordinarily. Blood is withdrawn from a prominent vein, a few bubbles of air are drawn into the syringe, the syringe is laid on its side for three minutes and then it is tilted slowly from end to end so as to permit the bubbles with their interspaces of blood to travel slowly from one end to the other at intervals of fifteen seconds. It is soon observed that the rapidity with which the bubbles traverse the length of the syringe is decreased with the formation of the clot and that thirty to forty-five seconds transpires between the onset of clot formation and its completion. This is noticed by the almost complete immobility of the bubbles

New Orleans Medical and Surgical Journal

94:361-410 (Feb.) 1942

- Study of Effect of Combustion Products of Natural Gas on Public Health H. G. Beck, Baltimore—p. 361
- Myocardial Dysfunction Due to Vitamin B₁ (Thiamine Hydrochloride) Deficiency A. Eustis, New Orleans—p. 369
- Treatment of Arthritis A. A. Herold, Shreveport, La.—p. 375
- Industrial Eye Injuries and Their Treatment. A. W. Martin, Bogalusa, La.—p. 381
- Milder Thyroid Deficiencies E. Jones, Alexandria, La.—p. 384
- *Condylomata Acuminata I. W. Kaplan, New Orleans—p. 388.
- Use of Enteric Coated Pills in Allergic States Preliminary Report of Eighty-Two Cases N. F. Thiberge, New Orleans—p. 390

Acuminate Condylomas.—Kaplan suggests the application of 25 per cent podophyllin in liquid petrolatum to all condylomatous masses. Six to eight hours after the application pain, which usually requires codeine sulfate or morphine for relief, is experienced. During the next twelve hours a decided local reaction, with inflammation and edema throughout the tissues near the site of application, ensues. On the second or the third day the condylomas begin to slough off and the pain ceases. On the fourth or fifth day the tissue returns to normal. No scarring is visible. A single application is usually sufficient. A weaker solution requires repeated applications, and the pain is almost as severe. In this manner the author cured 20 patients who had acuminate condylomas and venereal warts.

Ohio State Medical Journal, Columbus

38:101-200 (Feb.) 1942

- Teaching Nutrition to People Who Take Their Noonday Meals Out Alice H. Smith, Cleveland—p. 117.
- Primary Carcinoma of Gallbladder: Report of Two Cases. O. Berg hausen, Cincinnati—p. 125.
- Treatment of Patient with Type No. 17 Pneumococcal Meningitis Recovery. C. W. Kumpke, Hillsboro, and R. G. Cook, Camp Forrest, Tenn.—p. 128.
- Pustular Psoriasis: Report of Case B. P. Persky, Cleveland—p. 130.
- Congenital Dermoid Cysts of Nose R. S. Rosedale, Canton—p. 132.
- Lymphogranuloma Inguinale B. Seligman, Toledo—p. 135.
- Trichomonas Vaginalis Urethritis and Its Treatment. A. G. Sar-Louis, Cleveland—p. 137.
- Silicosis M. B. Rusoff, Columbus—p. 138
- Concurrent Tuberculosis and Pernicious Anemia. J. H. Skavlem and C. H. Storey, Cincinnati—p. 142.
- Gastrointestinal Allergy: Case Report. L. Sternberg, New York—p. 145
- Poison Ivy Dermatitis L. Goldman, Cincinnati—p. 146.
- Periarteritis Nodosa with Peripheral Polyneuritis and Hyperglycemia: Case Record Presenting Clinical Problems R. R. Williams and Pearl Zeek, Cincinnati—p. 148

Oklahoma State Medical Assn. Jour., Oklahoma City

35:1-46 (Jan.) 1942

- Relation of the Mental Hospital Physician to the Patient and His Relatives J. L. Dav, Supply.—p. 1.
- Hemorrhoidectomy, with Special Reference to New Technic and Avoidance of Pain E. Moore, Oklahoma City.—p. 4.
- Present Day Conception of Convulsive Disorders. C. R. Ryburn, Norman—p. 8
- Experience with Amebic Dysentery in Northeastern Oklahoma G. K. Hemphill, Pawhuska—p. 12
- Mastoiditis: Case History. T. Viereg, Clinton—p. 14.

Public Health Reports, Washington, D. C.

57:65-108 (Jan. 16) 1942

- Distribution of Health Services in Structure of State Government Chapter III Tuberculosis Control by State Agencies. J. W. Mountain and Evelyn Flook—p. 65.
- Pigment of Malaria Parasite D. B. Morrison and W. A. D. Anderson—p. 90
- 57:109-148 (Jan. 23) 1942
- Isolation of Coccidioides from Soil and Rodents. C. W. Emmons—p. 109.
- Studies on Duration of Disabling Sickness. III. Duration of Disability from Sickness and Nonindustrial Injuries Among Male Employees of Oil Refining Company, with Particular Reference to the Older Worker, 1933 to 1939 Inclusive W. M. Gafafer, Rosedeth Sitgreaves and Elizabeth S. Frasier—p. 112.
- *Incidence of Cancer in Dallas and Fort Worth, Texas, and Surrounding Counties, 1938 A. J. McDowell—p. 125.

57:149-188 (Jan. 30) 1942

- Nutritional Deficiency and Infection I Influence of Riboflavin or Thiamine Deficiency on Fatal Experimental Pneumococcal Infection in White Mice J. G. Wooley and W. H. Sebrell—p. 149.
- Role of Parasite Pigment in Malaria Paroxysm. D. B. Morrison and W. A. D. Anderson—p. 161

57:189-216 (Feb. 6) 1942

- Nutrition Survey of Population Groups. Report of Conference on Methods and Procedures—p. 189.
- Present Status of Full Time Local Health Organization F. W. Kratz—p. 194

Incidence of Cancer in Texas.—McDowell states that the total of 2,592 cases of cancer reported for Dallas County and the 1,091 for Tarrant County during a study year makes the rate for the prevalence of cancer among residents of this area 140 per hundred thousand, a rate higher than that in any of the five cities surveyed so far except Atlanta—24 for Chicago, 25 for Pittsburgh, 37 for Detroit, 129 for New Orleans and 157 for Atlanta. The primary sites most often involved among males in the order of frequency were the skin, the buccal cavity, the digestive tract and the genitourinary system. Among women the order is the genitourinary system, the breasts, the skin and the digestive tract. There was a clear relationship between the primary site and the age of the patient. The percentage of cases of cancer of the prostate, the skin and, to a lesser extent, the digestive tract increased as age increased; malignant growths of the female breast and uterus and all respiratory cancers were most frequent in persons in the middle portion of the life span, while cancer of the brain, bones and "all other sites" was relatively more frequent in persons less than 35. At least 23 per cent of the patients died within one year of the diagnosis of their cancer, 60 per cent of those with cancer of the digestive tract and brain, only 3 per cent of those with cutaneous cancer and 10 per cent of those with malignant growths of the buccal cavity.

Rhode Island Medical Journal, Providence

25:1-22 (Jan.) 1942

- General Introduction to Therapeutic Psychoanalysis. G. H. Alexander, Providence—p. 1.
- Toxemia of Pregnancy. Study of 273 Cases. W. S. Jones, Providence—p. 8

South Carolina Medical Assn. Journal, Florence

38:1-30 (Jan.) 1942

- Some Historical Aspects of the Medical College of the State of South Carolina R. Wilson, Charleston—p. 1.
- Recent Activities at Medical College. J. I. Waring, Charleston—p. 4
- Cervical Arthritis O. B. Chamberlain, Charleston—p. 7.
- Present Concept of Shock. E. F. Parker, Charleston—p. 12.

Southern Medical Journal, Birmingham, Ala.

35:123-224 (Feb) 1942 Partial Index

- Rural Obstetrics Report of Work on Frontier Nursing Service J H Kooser, Hyden, Ky—p 123
- *Scarlet Fever Immunization I Evaluation of Some Methods of Immunization Over Fifteen Year Period H C Graham, Tulsa Okla—p 132
- *Meat Borne Typhoid Outbreak in Tennessee P H Duff, Crossville, Tenn, and A E Hardison, Nashville, Tenn—p 139
- Hemolytic Streptococcus Infections in War Time C S Keefer, Boston—p 143
- General Concept of Etiology of Functional Menstrual Disturbances J C Burch and Doris Phelps, Nashville Tenn—p 150
- Fractures of Astragalus H B Boyd and R A Knight, Memphis Tenn—p 160
- Carcinoma of Colon, Factors Influencing Prognosis G V Brindley, Temple Texas—p 171
- Veneral Disease Control in National Defense Program G R Rown tree C M Fischbach and H R Leavell Louisville Ky—p 187
- Functional Dermatoses G V Stryker St Louis—p 193
- *Milk, a Human Poison M T Davidson, Birmingham, Ala—p 196
- Interpretation of Hypertensive Fundus J M Baird and G E Clay, Atlanta Ga—p 199
- *Sulfapyridine and Sulfathiazole Therapy in Lobar Pneumonia W H Kelley Charleston, S C—p 203
- Chemotherapy of Pneumonia T J Abernethy, Washington D C—p 210
- Lung Cysts W W Anderson Atlanta Ga—p 216

Scarlet Fever Immunization.—Graham evaluates some of the methods for immunization against scarlet fever. The intranasal, the oral, the intruction and the intradermal methods are inadequate. The intranasal method is inadequate unless rechecked by the Dick test every one to three years, and when the reaction again becomes positive additional antigenic stimulus must be administered until the Dick reaction is negative or protection may not be sufficient. The Dick subcutaneous injection method confers the most lasting immunity. When reactions follow it is likely that among the subjects who react there will be a higher percentage with a reversal to a positive reaction than among subjects with no reactions. With the Dick method the author has secured an 84 per cent immunity over a period of fifteen years. The test compares favorably with plain toxoid (78 per cent) but is probably inferior to the immunity obtained with two or three injections of alum precipitated toxoid. For general use the Dick method is superior to any other.

Meat Borne Typhoid Outbreak.—Duff and Hardison give an account of 7 cases of typhoid in Cumberland County, Tenn with 2 deaths. Investigation suggested that the only common factor of epidemiologic significance for 4 of the patients was the food served for Thanksgiving dinner. The only food prepared outside the home was souse, or head cheese. This product was eaten also by 2 of the other patients. Study of the avenue of infection disclosed that the souse had been prepared by a white woman who had had typhoid in 1930 and who for several years afterward had had attacks of nausea, vomiting, abdominal discomfort and pains in the region of the gallbladder. Successive enteric cultures confirmed the suspicion that she was a typhoid carrier. The seventh patient in the outbreak had not eaten any of the souse but since she had been in continuous contact with her daughter, who had known typhoid, it was assumed that the disease in her was secondary. Eberthella typhosa was isolated from the souse three months after its preparation.

Milk, a Human Poison.—Davidson studied the role that milk played in producing allergic symptoms among 100 patients at least 6 years of age whose manifestations (not due to seasonal pollens) justified complete testing and of 20 infants and children up to 4 years of age. Of the 100 patients 82 reacted to milk, 70 to egg, 39 to wheat, 50 to cottonseed, 95 to house dust and 90 to hairs, respectively symptoms were produced by these allergens in 40, 27, 8, 6, 51 and 9 per cent of the patients. Of the children 85 per cent reacted to milk, 63 to egg, 60 to wheat, 44 to cottonseed, 71 to house dust and 75 to hairs, and the allergens produced symptoms respectively in 55, 40, 40, 10, 45 and 10 per cent of the children. The symptoms complained of by the older group of patients were, in order of frequency, asthma, hay fever, urticaria, eczema, migraine, gastrointestinal upsets, conjunctivitis and acne, for the children they were asthma, eczema, hay fever and urticaria. The author believes

that in any allergic syndrome of perennial occurrence there is a 40 per cent or better chance that milk plays a leading role in producing the symptoms.

Sulfapyridine and Sulfathiazole in Pneumonia.—Kelley used sulfapyridine for treating 213 and sulfathiazole for 100 patients with lobar pneumonia. In all 16, or 7.5 per cent, of the patients given sulfapyridine and 7, or 7 per cent, of those given sulfathiazole died. If the patients who died during the first day of treatment are omitted, the respective fatality rates become 5.1 and 3 per cent. As is usually found, the mortality rate was greater among patients past their youth and in those with bacteremia, extensive pulmonary consolidation or antecedent disability. The benefits from sulfapyridine and sulfathiazole were similar, although with the latter the concentrations of the free drug in the blood as a whole were greater and relief of the acute illness was generally more prompt. Nausea and vomiting were far more frequent when sulfapyridine was used. Certain patients with renal damage had dangerously high levels of the free drug in the blood after a relatively short period of treatment with sulfathiazole.

Southwestern Medicine, El Paso, Texas

26:1-32 (Jan) 1942

- March of Medicine W H Woolston, Albuquerque, N M—p 2
- Treatment of Heart Disease in Childhood S Gibson, Chicago—p 4
- Hypothyroidism P J Connor and J Miner, Denver—p 8
- Sterilization of the Uterus W M Branch El Paso Texas—p 11
- Effect of Electromagnetic Radiations on Flocculation Tests for Syphilis E L Breazeale, Tucson, Ariz—p 13

Surgery, Gynecology and Obstetrics, Chicago

74:129-272 (Feb) 1942

- Experimental Study of Ureterointestinal Implantation V Destiny of Implanted Ureter F Hinman and H M Weyrauch San Francisco—p 129
- Excision of Head of Pancreas for Carcinoma with Studies of Its Blood Supply H R Ziegler, Rochester, N Y—p 137
- Aseptic Resection of Stomach for Carcinoma and Ulcer E Holman, San Francisco—p 146
- *Human Bites of Hand H Miller and J M Winfield Detroit—p 151
- Interscapulothoracic Amputation for Malignant Tumors of Upper Extremity Report of Thirty One Consecutive Cases G T Pick G McNeer and B L Coley New York—p 161
- *Treatment of Peritonitis Intraperitoneal Use of Sulfonamides Based on Animal Experiments C H Epps E B Ley and R M Howard, Oklahoma City—p 176
- Retrocervical Appendix Its Diagnosis and Surgical Approach W T Harsha, Chicago—p 180
- Tonus of Uterus During Pregnancy and Its Relation to Labor Study of 1,028 Observations Made with Lorand Tocograph D P Murphy, Philadelphia—p 182
- Functional Anatomy of Labor as Revealed by Frozen Sagittal Sections in Macacus Rhesus Monkey D N Danforth, R J Graham and A C Ivy Chicago—p 188
- Recurrent Fracture W A Evans Jr, Detroit—p 204
- Implantation of Ureters into Rectosigmoid with Study of Postoperative Course E J Poit, Baltimore—p 221
- Internal Wire Fixation for Fractures of Jaw Preliminary Report J B Brown and F McDowell St Louis—p 227
- Reaction of Bone to Metals II Lack of Correlation with Electrical Potentials R T Bothe and H A Davenport Chicago—p 231
- *Management of Acute Embolic Occlusion of Arteries to Extremities L A Atlas Cleveland—p 236
- Gastrostomy Jejunostomy Intubation J D Bisgard Omaha—p 239
- Multiple Myeloma R K Ghormley, G A Pollock, B E Hall and L H Beizer, Rochester, Minn—p 242
- Surgical Anatomy of Superior Hypogastric Plexus Report of 150 Personal Dissections B B Weinstein New Orleans—p 245
- So Called "Iodine Resistant" Hyperthyroidism J I Kearns Jr and P Starr Chicago—p 256
- Hazards of Fire and Explosion of Anesthetic Agents II In Presence of Craters B A Greene, Brooklyn—p 259

Human Bites of Hand.—Miller and Winfield state that injuries from human bites range from actual bites of the phalanges and hand to puncture wounds and lacerations produced by a fist striking exposed teeth. A more rare mechanism is that of sucking hangnails or the contamination with mouth organisms of a clean lacerated wound by a concerned bystander. Early infections due to human bites consist almost twice as often of lacerations of the fingers as of lacerations of the knuckles. In cases of late infection the reverse is true. The injury presented may be a simple cutaneous abrasion over the phalanges, knuckles or palmar surface of the hand or wrist, a complete avulsion of the cutaneous and subcutaneous segments and occasionally of the bone, a penetrating laceration either partially or

completely sevring the extensor tendon or a wound which may have opened into the dorsal subcutaneous space, subtendinous bursa, dorsal subaponeurotic space or the joint cavity. The routine treatment employed is to wash gently the area about the wound with soap and water for five minutes and then the wound itself and then to irrigate the wound with saline solution for ten minutes. The wounds are not probed. After the mechanical cleansing and probably a limited débridement, wet dressings are applied. No attempt is made to repair the rent in the joint capsule. Hands are splinted in the position of function. Lacerations are never sutured, nor are injuries to deeper structures repaired. Patients return daily for examination, and if a joint is involved they are usually hospitalized. Sixty-one early infections from human bites of the hand have been given prophylactic treatment during the last three years. Fifty-five of the wounds remained clean, five became mildly inflamed and one became grossly infected. The average wound healing time was eight and five-tenths days. After-care consisted essentially of splinting and the application of continuous compresses of saline solution, boric acid or magnesium sulfate for forty-eight hours, when they were discontinued if the wound remained clean. Splinting was continued until healing was complete. The therapy of human bites seen late, which are already serious and sometimes extensively infected, should emphasize adequate surgical intervention and earlier and more radical drainage. The hand is thoroughly cleansed under general anesthesia, as much infected and gangrenous sloughing tissue is removed as possible and areas of infection are adequately drained. The deepest anatomic plane involved should be inspected. Infection of the joint, if adequately drained, need not result in an ankylosed joint; excellent function may be obtained. One should be slow to amputate extensively infected fingers, but extensive drainage of the soft parts is essential. Amputation should be avoided when acute infection is present. After the wound has been cleansed and debrided and drainage has been established it is loosely packed with petrolatum gauze, and massive wet antiseptic dressings are applied. The fingers, hand and arm are splinted in the position of function and arranged so as to favor drainage. Patients with such wounds should be hospitalized. Of the 54 patients with late infected injuries due to human bites, 13 remained with stiff fingers. Despite the severity of these infections, the average healing time was thirty-four days and the average hospitalization period was nine and four-tenths days. There were no fatalities. These infections are prone to recur and exacerbate frequently. There were 3 instances of recurrence among the 54 patients.

Treatment of Peritonitis.—Epps and Howard studied the effect of four sulfonamides on experimental appendicitis, comparable to that in man, in 70 dogs. In a control group of 10 untreated dogs the mortality rate was 100 per cent. The therapeutic value of the local application of sulfabenzamide, sulfanilamide, sulfapyridine sodium and sulfathiazole was determined. The results seem to indicate that subcutaneous or intraperitoneal administration is preferable to the intravenous route. This is explained by the relatively short action of sulfanilamide when given intravenously. Of the four drugs used intraperitoneally, sulfathiazole was the most effective, probably because part of the drug was given in suspension, allowing a longer time for action before absorption was complete. The number of dogs given one of the sulfonamides was small; however, the authors are certain that any one of the drugs may be administered intraperitoneally with safety and without deleterious effect to the peritoneum or intraperitoneal organs. The usual toxic manifestations must be anticipated and the patient treated accordingly if they arise. Sulfapyridine sodium has been used intraperitoneally in a 4 per cent solution for 10 patients at the Oklahoma University Hospitals. The results have been spectacular. When the drug was given only by the intraperitoneal route, serious toxic manifestations were not encountered.

Acute Embolic Occlusion of Arteries to Extremities.—According to Atlas, when an artery in an extremity is acutely obstructed by an embolus it is necessary to restore immediately sufficient circulation to the limb to preserve its viability and to promote therapeutically a collateral circulation, so that the functional capacity of the limb as well as its viability will be preserved. Both are accomplished by increasing the volume

rate of blood flow through the available collateral circulation. Any method that augments the quantity of blood flowing through a collateral arterial network diminishes the peripheral resistance to blood flow through a dilatation of the arteriolar-capillary bed into which collateral vessels empty. Since ischemic tissue is saturated with vasodilating substances, such an increase in the flow of blood through collateral channels would automatically follow the acute occlusion of a principal artery. Often an effective collateral circulation develops without therapeutic assistance. There would be many more such instances if it were not for the fact that, when an embolus suddenly occludes a peripheral artery, the arterial bed in that extremity, and sometimes in the opposite extremity, is thrown into a greater or lesser degree of spasm. An embolus lodged in the distal portion of an extremity may reflexly render the more proximal and larger arteries pulseless. Unless spasm is considered, these larger spastic vessels may be surgically explored for the purpose of removing what is erroneously considered to be the offending embolus. When the collateral circulation in an extremity rendered acutely ischemic is so spastic that vasodilating substances surrounding it do not relax it, the use of heat as an additional dilating stimulus is not only illogical but dangerous. During the acute stage of an embolic occlusion, treatment should be concerned with relaxing spastic vessels and preventing their thrombosis. To secure relaxation the intravenous injection of 0.032 Gm. of papaverine hydrochloride every four hours for forty-eight hours and then three times a day for a week is almost specific. Heparin is administered to prevent thrombosis; 50 mg. is given intravenously every four hours. The limb is then swathed in cotton and protected with an unlighted cradle. After the spasm disappears, measures may be instituted to stimulate further the flow of blood through collateral channels. Local application of mild heat, rhythmic venous occlusion and suction pressure may be employed. Should the ischemia fail to improve or progress despite treatment, organic block of a major vessel must be considered and embolectomy performed. Persons who have sustained an embolic occlusion may present themselves several weeks after the accident. In them a periarteritis often involves the thrombosed vessel and stimulates afferent sympathetic neurons with resultant pain or reflex spasm of the collateral bed. The offending thrombosed arterial segment should be resected.

Virginia Medical Monthly, Richmond

69:1-56 (Jan.) 1942

- Public Health in Virginia. I. C. Riggan, Richmond.—p. 2.
- Management of Chronic Suppurative Pulmonary Disease. P. P. Vinson, Richmond.—p. 7.
- Nephrectomy, with Comments on Diagnostic Procedures in Obscure Conditions. T. J. Hughes, Roanoke.—p. 14.
- Uterine Contractions in Labor: Effect of Analgesic Drugs. W. Bickers, Richmond.—p. 15.
- Hormonologic Consideration of Functional Dysmenorrhea. R. L. Pullen and E. C. Hamblen, Durham, N. C.—p. 19.
- The Airplane, Possible Means of Transmission of Disease. W. P. Jackson, Norfolk.—p. 29.
- Diabetes Insipidus Following Encephalitis. W. R. Jordan and W. R. Graham, Richmond.—p. 35.
- Use of Heat in General Practice. B. Boynton, Norfolk.—p. 37.
- Nasal Myiasis Due to Bot Fly Larva (*Cuterebra* sp.): Report of Case. R. G. Beachley, Arlington, and F. C. Bishopp, Washington, D. C.—p. 41.
- Infectious Diseases as Cause of Diabetes Insipidus. H. A. Hoffman, Washington, D. C.—p. 42.

Yale Journal of Biology and Medicine, New Haven

14:229-332 (Jan.) 1942

- Lipotropic Substances. Elizabeth G. Frame, New Haven, Conn.—p. 229.
- Necrosis of Renal Pelvis Associated with Obstruction of Ureter. R. Katzenstein and M. C. Winternitz, New Haven, Conn.—p. 257.
- Studies on Relation of Kidney to Cardiovascular Disease: V. Lesions of Myocardium. S. H. Durlacher and M. C. Winternitz, New Haven, Conn.—p. 269.
- Social Implications of Medical Science. J. P. Peters, New Haven, Conn.—p. 279.
- Strabismus in New Haven Dispensary. C. C. Clarke, New Haven, Conn.—p. 291.
- Bacteria and Formed Elements in Urine in Normal Pregnancy. J. W. Hirschfeld, D. C. Leary and W. R. Foote, New Haven, Conn.—p. 297.
- Some Physician Friends of Joseph Farington, R. A. G. H. Smith, New Haven, Conn.—p. 307.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London 54:1-38 (Jan.) 1942

Hydrogen Ion Concentration in Therapeutic Bases. R. G. Harry.—p. 1.
Chemicals in Fabrics as Potential Skin Irritants. H. E. Cox.—p. 22.

British Journal of Radiology, London 15:1-32 (Jan.) 1942

Radiologic Aspect of Gastritis. F. R. Berridge.—p. 1.
Effect of Ionizing Radiations on Broad Bean Root. L. H. Gray and J. Read.—p. 11.
Gastroscopic Appearances in Gastritis. J. F. Dow.—p. 17.
Effect of Bone Absorption of Delivered X-Radiation and Its Relation to Predetermined Pelvic Dosage Schemes. B. Sandler.—p. 20.
Direct Reading Instrument for Measurement of Ionization Currents in Gamma Ray Therapy. W. A. Langmead.—p. 27.

British Medical Journal, London 2:897-932 (Dec. 27) 1941

"Growth" and Diabetogenic Action of Anterior Pituitary Preparations. F. G. Young.—p. 897.
*Treatment of Pulmonary Tuberculosis by Thoracoplasty. F. R. Edwards, G. Leggat and H. M. Davies.—p. 901.
Improved Method of Regional Anesthesia in Acute Abdominal Surgery. N. R. James and H. W. Burge.—p. 906.
Trichiniasis in Birmingham. L. J. Bacon.—p. 909.

Thoracoplasty for Pulmonary Tuberculosis.—Edwards and his collaborators adhered to the following indications in the treatment of 59 patients between 1933 and 1940: The disease must be unilateral and the lesion fibrotic, pneumothorax must have failed and the age of the patient should be between 15 and 45 and his general condition good. Of the patients 52 had parenchymatous disease and 7 had tuberculous empyema. A total of one hundred and fifty-eight thoracoplasties were performed, and a follow-up study in May 1941 showed that 35 patients (68 per cent) were fit and well and 30 of them able to work. Nine patients are still unfit or have a positive sputum, and 8 have died. Of these 52 patients 40 were considered "good risks" (30 of whom are fit and well and have a negative sputum) for thoracoplasty and 12 "justifiable risks." Of the 7 patients with tuberculous empyema 5 have died and 2 are not fit; 1 needs a plastic operation and 1 is losing weight. Operation undertaken on such patients before the general effects of the toxemia become too definite and the pleural membranes too thickened would undoubtedly result in more satisfactory results. The authors declare that from the public health point of view no person with a positive sputum should be at large in the community. A ten rib paravertebral thoracoplasty with removal of the transverse processes is the procedure of choice.

Lancet, London 2:783-816 (Dec. 27) 1941

Bacterial Contamination of Cerebrospinal Fluid. W. Smith and Muriel M. Smith.—p. 783.
Treatment of Air Raid Casualties. J. A. Shepherd.—p. 785.
*Vitamin A and Dark Adaptation: Effect of Alcohol, Benzedrine and Vitamin C. S. Yudkin.—p. 787.
Significance of Intelligence in Skin Cases. G. A. Hodgson.—p. 791.
Macrocytic Anemia in Pregnant Women on Gold Coast. Beatrice A. S. Russell.—p. 792.
Serum Calcium and Inorganic Phosphorus in Parathyroid Tetany: Their Bearing on Treatment. J. D. Robertson.—p. 795.
Resection of Head of Pancreas and Duodenum for Carcinoma. R. Maingot.—p. 798.

Vitamin A and Dark Adaptation.—Yudkin studied the effect on dark adaptation of giving 100,000 international units of vitamin A on an empty stomach to 24 patients. Food was taken after three hours. The dark adaptation was measured after one, four, seven, ten and twenty-four hours. The results varied, but usually an improvement in dark adaptation began in about two hours and was maximal in eight to ten hours. Within twenty-four hours the curve had usually returned to the original low state. A few patients did not have hemeralopia again for several days or even weeks. The final rod threshold, the final cone threshold and the rod-cone transition time all were usually affected. There would be no effect in an extremely deficient subject until several doses of 100,000 international

units were given, and then the reaction was transitory. After a few more doses the usual improvement and relapse would ensue. After still more doses the hemeralopic patient would not return for three or four days, after which a much smaller dose produced a result. The response to further large single doses lasted for weeks or even months. The author believes that the best way to decide whether a person's night blindness is due to a deficiency of vitamin A is that suggested by Steven and Wald, or the determination of "threshold lability," i. e. the fall from a high to a significantly lower final rod threshold after about ten large doses of vitamin A. The appearance of vitamin A in the blood four to five hours after any dose will show that the vitamin is being absorbed. Night blindness due to vitamin A deficiency will almost certainly improve after two large doses, but if no response occurs it may be assumed that the night blindness is not due to a deficiency of vitamin A. The value of giving 500 mg. of vitamin C for ten days, as suggested by Stewart and by Kimble and Gordon, was studied on 6 patients with poor dark adaptation. No improvement was observed, whereas the adaptation of all of them became normal after treatment with vitamin A. Yudkin concludes that vitamin A may not be the only factor affecting the complicated process of dark adaptation; any link in the chain may be affected: oxygen, hypoglycemia, amphetamine sulfate and alcohol may all affect dark adaptation; the latter two cause improvement and the former two deterioration. Congenital and hereditary night blindness and certain retinal diseases affect dark adaptation independently of the adequacy of vitamin A. Even when hemeralopia is cured with vitamin A it is not known which part of the metabolic cycle was at fault.

1:1-30 (Jan. 3) 1942

Natural History of Bright's Disease: Clinical, Histologic and Experimental Observations. A. Ellis.—p. 1.
Zinc Peroxide Preparations, with Notes on Clinical Uses. C. Hoyle, J. W. Spence and S. H. Faulkner.—p. 7.
*Recovery from Granulocytosis After Rigor During Transfusion. R. M. Cross.—p. 9.
Anthrax Septicemia: Fatal Case. A. G. M. Severn.—p. 9.

Recovery from Granulocytopenia After Rigor During Transfusion.—Cross reports that an airman aged 20, who was inoculated on Aug. 18, 1941 with T. A. B. and ATT [antitetanus toxoid?], had pyrexia with a severe local reaction on August 19 and during the next ten days was given 42 Gm. of sulfapyridine by mouth. By this time he complained of tenderness of the lower gums and stiffness of the nuchal muscles, and the tonsillar glands were enlarged. The leukocyte count was 2,500 per cubic millimeter, and the granular leukocytes were absent. He was given intramuscular injections of 10 cc. of pentnucleotide twice a day for seven days. After 500 cc. of blood of group 0 had been given on September 1 the total leukocyte count increased to 3,500 and the neutrophils numbered 3 per cent. By this time the lower gums and cheek were ulcerated, the tonsillar glands were enlarged and painful and there was intermittent pyrexia, the temperature rising to about 100.2 F. After pentnucleotide had been given for two more days the total leukocyte count increased to 5,000, with 6 per cent neutrophils. A second transfusion was given on September 4 and the leukocyte count increased to 8,000, with 13 per cent neutrophils. Tenderness of the glands decreased, and the patient felt much better. A third transfusion was started on September 8 but had to be discontinued because the patient had a severe rigor lasting about fifteen minutes. Blood films taken immediately after the rigor showed a slight increase in the total leukocyte count and in the percentage of neutrophils. Four hours after the rigor, the temperature rose to 105.6 F. and the total leukocyte count was 40,000, with 85 per cent immature neutrophils. Next morning the temperature was normal, and in two days the ulceration of the gums was completely healed. During the next four days the total leukocyte count and the percentage of neutrophils gradually returned to normal and the cells appeared progressively more mature. The patient was discharged from the hospital on October 8, fully recovered. There was no question of transfusion of incompatible blood; so the cause of the pyrexia remains a mystery. Nevertheless it effectively aborted the granulocytopenia and suggests that artificial but controlled pyrexia, if used with caution, might be useful in aborting such attacks.

Schweizerische medizinische Wochenschrift, Basel

71:1437-1464 (Nov. 15) 1941. Partial Index

- Pregnancy Reaction According to Aschheim-Zondek and Its Modifications. E. Held.—p. 1437.
 Aseptic Necroses. R. Meyer-Wildisen.—p. 1442.
 Experimental Research on Nephritis and Its Significance for Clinical Aspects of Renal Diseases. M. Gukelberger.—p. 1445.
 Etiology of Meralgia Paraesthetica. W. Jost.—p. 1448.
 *Estimation of Patients with Heart Disease by Military Physician. W. Hadorn.—p. 1449.
 *Estimation of Rheumatic Disorders in Military Service. V. Heinemann.—p. 1454.

Heart Disease and Military Physician.—Hadorn maintains that anatomic defects of the heart may result from functional disturbances. The assumption of spastic-functional-ischemic-necrotic processes is entirely justified. Neurocardiac disturbances may develop into myocardial lesions without an intercurrent infection. One should pay attention to all the complaints of soldiers which refer to the cardiovascular system. The early symptoms of circulatory disturbances are nearly always subjective. The patients complain of palpitation, sweats, fatigue, dyspnea, insomnia, weakness, fainting and darting heart pains. Specific information should be sought as to the type of dyspnea. Pain in the cardiac region must be investigated. Formerly substernal pain was regarded as of organic origin, a symptom of ambulatory angina pectoris, whereas pain in the region of the cardiac apex was considered nervous or neurotic. Electrocardiographic records revealed that darting pains in the region of the heart may be of coronary or myocardial origin. Certain symptoms and minor alterations in signs, which were formerly overestimated and regarded as sufficient for rejection, are of no importance. Moderate palpitation is not significant. Palpitation and tachycardia are not identical; tachycardia by itself is of no particular importance. Respiratory arrhythmia and occasional extrasystole, if occurring alone, likewise do not establish the presence of heart disease. Although extrasystoles are no longer considered as "harmless mischief of the heart" (Wenckebach), the monotopic ones are of no particular importance when heart and circulation are otherwise normal. Electrocardiography reveals whether the extrasystoles are monotopic or polytopic. If extrasystoles appear immediately after exertion they are not harmless. Extrasystoles can be brought on by the use of nicotine, chronic constipation, meteorism and an elevated diaphragm. Every extrasystole demands a search for foci of infection. Auricular extrasystoles must be estimated differently from the ventricular ones, because they may become frequent and lead to paroxysmal tachycardia and auricular fibrillation. Paroxysmal tachycardias which appear only at great intervals do not render one unfit for military service. Systolic murmurs, formerly regarded as identical with mitral insufficiency, are generally of little importance. Attention must be given to a history of infections, articular rheumatism, chorea minor, diphtheria, syphilis, tonsillitis and infection of the teeth and sinuses. Coronary complaints should be taken seriously at any age. Objective examination by the military physician includes examination of the pulse, inspection, palpation and percussion of the cardiac region, roentgen examination and electrocardiography. Electrocardiography is most important. The simple test of holding the breath may be employed to determine the work capacity of the heart. Observations on the pulse frequency, blood pressure and respiratory rate before and after a certain exertion constitute the functional examination. Other tests mentioned are the "getting up reaction," the hepatic pressure test of Plesch, Volhard's test, the separate measurement of the day and night urines, the examination of the urine for urobilinogen, the roentgenologic examination of the lung for stasis, probatory strophanthin injection according to Fraenkel and the exertion electrocardiogram.

Rheumatic Disorders in Military Service.—According to Heinemann the incidence of rheumatism in the army has increased since the onset of the war, since older men have been called for prolonged service. The exertions and exposure of military service are contributing causes. A number of etiologic factors determine the variable symptoms of rheumatism. The control and supervision of rheumatic disease should be in the hands of physicians with special training and experience in rheumatism, so that suitable measures may be instituted

early, patients with hopeless disease discharged and unnecessary dismissals avoided. Antipyretics, salicylic acid and choline derivatives have proved effective in the treatment of rheumatic disorders. Aminopyrine proved particularly effective in chronic rheumatic disease. Sulfur normalizes the impaired blood perfusion of the skin. A catalytic activation of the mesenchyma with stimulation of its phagocytic activity is ascribed to the colloidal gold preparations. It has not been determined to what extent sulfonamide derivatives influence the course of rheumatism, but their use is indicated whenever infectious foci are found. Exercise should begin early, but during the acute stage rest should not be interrupted by gymnastics and massage, particularly in the presence of inflammatory articular exudates. Gymnastics and massage should be carried out only by well trained persons. Too little attention is given to the necessity of a lactovegetable diet. Static defects are often contributory causes in rheumatism, and they should be corrected by orthopedic treatment. Spread, sag and flat feet are the chief orthopedic defects that cause changes in the neighboring joints. Some complaints referable to the hip joint in soldiers are the result of an anlage to coxa vara. Men with static dynamic difficulties due to defects of the vertebral column can be kept in army service by transferring them to a unit requiring less physical exertion. The author regards the removal of suspected infectious foci advisable in spite of the realization of the plurality of causal factors of rheumatism.

Día Médico, Buenos Aires

14:17-32 (Jan. 12) 1942. Partial Index

- *"Pseudocholangiopathic" Form of Coronary Thrombosis. P. A. Tapella.—p. 24.
 *Substitutes for Blood Transfusion. A. Battaglia.—p. 28.

"Pseudocholangiopathic" Form of Coronary Thrombosis.—Tapella reports 3 cases of typical acute coronary thrombosis associated with jaundice. The clinical diagnosis was confirmed by electrocardiograms. Jaundice appeared within twenty-four hours of the attack. It lasted for about ten days and disappeared in the next three or four days. Symptoms of disease of the liver, the gallbladder or the bile ducts were not present either before or after the coronary accident, although the patients were observed for two to four years after the attack. The gallbladder and bile ducts were normal when observed cholangiographically. The author believes that in this type of coronary thrombosis jaundice is due to a reflex which originates in the lower cardiac nerve, reaches the zone of confluence of the nerve with the great splanchnic nerve at the paravertebral sympathetic ganglions and stimulates the bile ducts through the great splanchnic nerve. The name pseudocholangiopathic coronary thrombosis is suggested for this type of attack.

Substitutes for Blood Transfusion.—According to Battaglia the so-called blood substitutes or artificial serums are of value only in emergency, when blood plasma or blood serum cannot be obtained. The order of value of blood substitutes in acute hemorrhage is as follows: blood plasma, blood serum, Ringer-hemoglobin solution, isotonic solution of sodium chloride with acacia, erythrocytes suspended in crystalloid solutions, isotonic sodium chloride solution and isotonic dextrose solution. The therapeutic effects of blood plasma are as good as those of blood serum. Liquid plasma can be preserved only for a few weeks, after which there is danger of precipitation of fibrinogen. Plasma diluted in isotonic solution of sodium chloride up to approximately the primary volume of total blood can be preserved without precipitation for a long time. Desiccated blood serum and plasma can be kept indefinitely and used in various concentrations according to proper indications. The use of blood serum and plasma for transfusion does not involve blood group testing. These substances do not cause unpleasant reactions. When large doses are transfused it is advisable to use blood serum or plasma from donors of corresponding blood groups. Artificial serums may be used as substitutes for blood transfusion only when compatible blood, blood serum or plasma is not available. Transfusion with blood serum or plasma is mainly indicated in shock of any origin, acute burns, acute hemorrhage, hypoproteinemia, certain forms of nephrosis and intracranial hypertension.

Book Notices

Youth and the Future. The General Report of the American Youth Commission. Cloth. Price, \$2.50. Pp. 296. Washington, D. C.: American Council on Education, 1942.

The American Youth Commission, which has heretofore published brief statements and pamphlets and has previously dealt with segments of the youth problem in book publications, now issues this general report, in which various phases of youth problems in depression, in prewar days and in war time are considered. The book has an explanatory foreword and introduction by Owen D. Young, chairman of the commission, and four principal parts. Part I contains five chapters dealing respectively with youth unemployment as a continuing problem, experience with youth work programs, work programs for youth in the future, relations between schools and youth work programs, and the problem of full employment. In part II are eight chapters touching on various phases of the basic problems of youth, such as general needs, education, occupational adjustment, the use of leisure time, marriage and the home, health and fitness, delinquency and youthful crime, and education for citizenship. In part III are four chapters dealing with the different aspects of responsibility for action for youth as they arise in communities, in state governments, in the federal government and in the relationships of public and private agencies related to planning and action for youth and by youth. Part IV has one concluding chapter entitled "Meaning for Life."

The book is a broad, comprehensive, sincere, inspiring and compelling study. Its conclusions are far reaching and far seeing. A real effort has been made to see the problem as a whole, regarding youth as one segment of our population, but a segment of tremendous potential importance, both for the present, the immediate future and the far distant horizons of national destiny. It is not to be expected that every reader will agree with the conclusions in the report, but every honest reader must admire the courage and respect the sincerity of the conclusions reached and those who reached them.

The medical profession is most concerned with those aspects of the report dealing with health and fitness. These are dealt with primarily in chapter II but are not overlooked elsewhere, as indicated by numerous subsidiary references to health and fitness in connection with other phases of the youth program. The report calls for greater attention to the health of youth, even though youth is essentially a healthful time of life, comparatively speaking. Youth, nevertheless, has definite problems, of which the four principal ones are listed as tuberculosis, the venereal diseases, appendicitis and rheumatic heart disease. The emotional and personality problems of youth are dealt with at considerable length, not only in this chapter but in others, with appropriate emphasis on the fundamental need of man at any age, namely emotional security and a sense of being needed. One could differ with details in the proposals of the commission, but one can hardly differ with its fundamental premises. For instance, one might be inclined to question the efficacy of a youth health program beginning with a physical examination at the age of 18, especially since dental defects, which are admittedly the leading deviation from normal in our nation, are probably determined in utero or immediately after birth.

The demand of the commission for something rather immediate in the way of health insurance systems, with the implication that nothing along this line has been done, could be questioned in the light of the widespread prevalence of hospital insurance plans and the experiments by medical societies and other agencies in attempting to arrive at a formula for delivering medical service to all the people at a price which the people can pay. Yet in the main the commission stands for those things for which the medical profession has stood; namely, free choice of physician and cash benefits.

100 Years of Medicine in Minnesota. Boards. Pp. 26, with illustrations. St. Paul: Minnesota State Medical Association, 1941.

The Minnesota State Medical Association, in celebrating the hundredth anniversary of the arrival in what is now the state of Minnesota of the first civilian practitioner of medicine, sent to community leaders and institutions a copy of this interesting booklet. The progress of medicine in Minnesota from the time

Dr. Christopher Carli arrived at what is now Stillwater on May 24, 1841 is shown in pictures. Only twelve years later most of the twenty-hardy doctors in the territory met in St. Paul to form the Minnesota Medical Society, the forerunner of the present state medical association, which has nearly three thousand members in thirty-four component county and district societies covering every section of the state. Close cooperation between the private practitioners and the Minnesota State Board of Health during these hundred years practically eradicated many of the diseases that scourged this territory. Today Minnesota is said to lead in the control of tuberculosis and syphilis and in the saving of mothers and babies. In 1841 more than half of the babies died before they were 5 years old and three fourths of the people died before they were 40. Today only 8.2 per cent of the babies die under the age of 5, and more than half of the deaths are delayed until after 60. Children as well as adults will be much interested in this pictorial history. The editorial material found here and there among the pictures will also appeal to practically all ages, and it is simply stated and very clear.

The March of Medicine. The New York Academy of Medicine Lectures to the Lally [Number VI], 1941. Cloth. Price, \$2. Pp. 154, with 3 illustrations. New York: Columbia University Press, 1941.

This collection of essays represents the sixth set of a series of lectures to the public at the New York Academy of Medicine. It is the third volume to bear this title, the other two having been published in 1939 and 1940. Since the purpose of the lectures is to show historically how medicine has developed and to present its social and cultural significance, each lecture should interest the physician and the layman and should be written in terminology requiring no special knowledge of medicine or the allied sciences. As in the past, the writers on the whole have pursued this goal with some success. After a terse foreword by Dr. Malcolm Goodridge, and a philosophic introduction by Dr. Haven Emerson, the collection presents articles entitled on humanism and science, by Dr. Alan Gregg, Paracelsus in the light of four hundred years, by Dr. Henry E. Sigerist, psychiatry and the normal life, by Dr. William Healy, philosophy as therapy, by Irwin Edman, Ph.D., the promise of endocrinology, by Oscar Riddle, Ph.D., and what we know about cancer, by Dr. Francis Carter Wood. A fairly adequate index completes the collection and is a somewhat unique feature for a book of this type. Although the essays are designed primarily for the layman, it is probable that only a select group will obtain the utmost from them, as the authors occasionally become too philosophic to maintain the interest of the average man in the street. Readers who have had more than the usual training in the various sciences should enjoy the book. As Haven Emerson said in his introduction, "Glamor and romance there is in abundance in medicine for student, practitioner and patient." The articles in this volume aid materially in stressing this fundamental truth.

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases. By Richard P. Strong, Consultant in Tropical Medicine to the Massachusetts General Hospital and the Boston City Hospital, Boston. In Two Volumes. Sixth edition. Fp. Price, \$21 per set. Pp. 871, with 197 illustrations; 872-1747, with 201 illustrations. Philadelphia: Blakiston Company, 1942.

Dr. Strong has taken over from Admiral Stitt, U. S. Navy, retired, the authorship of this work. While this is said to be a revision of Admiral Stitt's book, it is in fact a new work, much more comprehensive than its predecessor, largely rewritten and made also a book of reference to recent research. The comprehensiveness of the work is indicated in the opening chapter on malaria, which in itself comprises one hundred and thirty-five pages, not counting a second chapter of some twenty-eight pages on blackwater fever. Knowledge of tropical diseases has increased much in recent years, and that too accounts in part for the increase in the size of the publication. The illustrations in some chapters are adequate. A helpful part is the appendix. In an index of clinical diagnosis are pointed out the diseases in which the symptoms associated with tropical diseases may arise. The second chapter of the appendix concerns laboratory procedures used in diagnosis; for example, under amebiasis the author advises one to examine the feces for cysts and trophozoites; also that amebiasis may show monocytosis, and that one should differentiate from bacillary dysentery and chronic non-

specific ulcerative colitis. The third section of the appendix, on tropical hygiene, discusses the effects of sunlight, altitude, storms, atmospheric pressure, heat, humidity, mountain climates, the effects of heat on the white and brown races, acclimatization and colonization; and this is followed by a discussion of the clothing, tropical housing, vaccinations that one should have on going to tropical climates, equipment, diet, infant feeding, beverages, water purification, sewage disposal and insects. Dr. Strong is eminently fitted to take up this work. He has served in various capacities in many tropical countries and now is a consultant to the Secretary of War on tropical medicine and a professor of tropical medicine emeritus at Harvard University. This work will take its rightful place among the great works on tropical medicine.

Clinical Roentgenology of Pregnancy. By William Snow, M.D., Director of Radiology, Bronx Hospital, New York. Cloth. Price, \$4.50. Pp. 178, with 119 illustrations. Springfield, Ill., and Baltimore: Charles C. Thomas, Publisher, 1942.

This book was written to serve "as a working manual and as a ready reference" on the subject of roentgenography in obstetrics. It is based on the author's extensive experiences in this field. The chapters are devoted to a general discussion of the use of x-rays in pregnancy, positioning of the patient and technic of x-ray exposures, x-ray pelvimetry and cephalometry computations, the pelvic shape and its measurements, the fetus and pelvis, x-ray visualization of the soft tissues in pregnancy and case reports. Since the author was a pioneer in the x-ray visualization of the soft tissues in pregnancy, it is only natural that the longest and best chapter in the book is the one which deals with this subject. He also describes his own method of x-ray pelvimetry and cephalometry. There are one hundred and nineteen illustrations in the book, but many are not clear and a good number have been touched up, which spoils their value. Seventeen illustrations are devoted to placenta previa. The author has drawn a few illustrations which are distinctly amateurish. There is considerable waste space in the book, particularly on the pages opposite certain roentgenograms where the entire page is blank except for a few words in the center. In spite of these shortcomings the book should prove of great value to every one interested in roentgenography as it pertains to obstetrics. It is well written, and the publishers have done their part admirably.

Technique of Gastric Operations. By Rodney Maingot, F.R.C.S., Senior Surgeon to the Southend General Hospital and to the Royal Waterloo Hospital, London. Cloth. Price, \$4.50. Pp. 240, with 55 illustrations. New York & London: Oxford University Press, 1941.

This is a brief but in many ways excellent treatise on gastric surgery. The author states that he intends mainly to outline surgical technic, which he does quite well. A few more illustrations would probably be helpful in permitting the reader to follow more easily the complicated steps associated with the accurate performance of such operations as the Haberer modification of the first method of Billroth. Maingot finds it difficult to separate completely technical aspects from clinical findings and results. This is, perhaps, the only but none the less serious drawback to a book of this nature. The problems of gastric surgery are so complex and so intricately related to clinical experience that the proper choice and application of the many procedures available are indeed difficult: so much so that only surgeons of great experience are able to cope successfully with them. The occasional operator in the field of gastric surgery cannot hope to produce results equal to the master in the field. The problem of late results in gastric surgery, whether for benign or for malignant lesions, is almost as pressing as the immediate postoperative recovery. A book of this nature, necessarily brief, will only mildly attract the experienced and not sufficiently educate the inexperienced. Maingot's vast knowledge in this field, which is self evident, tends to overcome this objection in part. Technics described include the Rammstedt operation and its modifications, popular variations of the first and second Billroth types of resection, gastroenterostomy, gastrotomy and certain other operations involving the stomach and adjacent structures. Illustrations are clear and simple, and the descriptive text is concise and logical. The author has undertaken a difficult task and has crammed considerable of a perplexing subject into the brief confines of this book.

Clinical Hematology. By Maxwell M. Wintrobe, M.D., Ph.D., Associate in Medicine, Johns Hopkins University, Baltimore. Cloth. Price, \$10. Pp. 792, with 174 illustrations. Philadelphia: Lea & Febiger, 1942.

The author of this volume is well known in hematology. The subjects of the eighteen chapters are origin and development of the cells of the blood in the embryo, infant and adult; the erythrocyte; the leukocytes; blood platelets; the blood as a whole; the principles and technic of blood examination; general considerations and treatment of anemia; pernicious anemia and related macrocytic anemias; normocytic anemias; hemolytic anemias; hypochromic microcytic (iron deficiency) anemia; anemia in infancy and childhood; polycythemia; the purpuras; hemophilia and other hemorrhagic disorders; leukemia; tumors and tumor-like conditions involving the blood forming organs; granulocytopenia and infectious mononucleosis. Each chapter is well written, is illustrated where indicated and contains a complete bibliography. It is difficult to choose one chapter which is far superior to the others, but most readers will probably give special attention to the sections on the purpuras, hemophilia, leukemia and granulocytopenia. These are current and popular topics because of our ever expanding knowledge of the effect of commonly used medicaments on the blood cells. Of particular value to laboratory workers will be an appendix which tabulates the blood counts in twenty-three species of mammals and presents a bibliography on comparative hematology. This book is a valuable addition to any library.

La educación y el cuidado de los excepcionales. Síntesis de la labor que se realiza en los Estados Unidos en beneficio de los niños y adultos que se apartan de lo normal. Por Nerle E. Frampton y Camilla Morgan. Publicaciones de la Unión Panamericana. Educación, números 113-114. Paper. Pp. 38. Washington, D. C., 1941.

This pamphlet constitutes a synthesis of the work which is carried on in the United States in benefit of children and adults who are "exceptional," especially the handicapped. It contains information on the purposes and activities of the most prominent national organizations of the United States which are entirely devoted to work for the welfare and especially for the education of the different groups of the handicapped. It gives the names, local addresses and descriptions of the work carried on by the various national organizations for the education of the blind, the deaf, the crippled, those with speech disorders, heart diseases, cancer and tuberculosis, as well as those who offer problems of social and mental hygiene, juvenile delinquency and the "exceptionals" in general, which includes subnormal and supernormal. At the end of each chapter, in which the work of a given association is described, there is also a section of selected bibliography of American authors for each of the different groups.

Prepayment Plans for Medical Care. By Franz Goldmann, M.D., Associate Clinical Professor of Public Health, Yale University School of Medicine. Part I: Underlying Principles. Part II: A Comparative Study of Services and Costs of Five Plans. Joint Committee of the Twentieth Century Fund and the Good Will Fund; and Medical Administration Service, Inc. Paper. Price, 25 cents. Pp. 60. Boston: Edward A. Filene Good Will Fund, [n. d.].

Five plans that are only partially identified are described. It is assumed that "group practice of medicine" insures a body of qualified specialists using all available methods of diagnosis and treatment, while it is implied that plans involving the free choice of a physician will deliver care by a general practitioner who will be isolated from specialists, laboratories and hospitals. Description of the various plans is somewhat sketchy, giving the principal factors in easily comparable form. Considerable attention is given to costs without the author's recognizing that actuarial facts concerning most of the plans are still indefinite.

The 1941 Year Book of Pathology and Immunology. Pathology. Edited by Howard T. Karsner, M.D., Professor of Pathology, Director of the Institute of Pathology, Western Reserve University, Cleveland. Immunology. Edited by Sanford B. Hooker, A.M., M.D., Professor of Immunology, Boston University School of Medicine, Boston. Cloth. Price, \$3. Pp. 623, with 136 illustrations. Chicago: Year Book Publishers, Inc., 1941.

The 1941 Year Book of Pathology and Immunology follows the plan of previous volumes in including the most important abstracts in the fields concerned with, however, a great number of editorial comments based on the editors' experience. Attention is called specifically to new work on shock, arteriosclerosis, blood transfusion and gramicidin.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ABORTING A COLD

To the Editor:—What is the therapy for acute coryza? What is the surest way of aborting a cold at the earliest onset of symptoms?

M.D., Illinois.

ANSWER.—Since acute coryza is recognized as a nonspecific self-limited disease for which there is no specific remedy, it is the consensus that it should be treated in the most conservative manner. The prime considerations are relief from pain, complete physical and mental rest, plenty of fluids and a mild diet. The patient should be in bed in a room whose humidity is at least 45 to 60 degrees. A steam kettle or a vaporizer should be kept going for this purpose. It is immaterial whether the vapor is impregnated with compound tincture of benzoin, oil of eucalyptus or any other aromatic substance, since the medication of the vapor adds nothing to the effectiveness of the moisture. Opiates, particularly Dover's powder (powder of ipecac and opium) are useful in reducing tension and relieving pain; they are preferable to the depressing coal tar products. A mild laxative is indicated only if there is evidence of intestinal stasis. Purging is contraindicated. If the nasal passages are blocked, relief may be obtained by the use of a 1 per cent solution of ephedrine in isotonic solution of sodium chloride instilled in the Parkinson or the Proetz position. The patient should be kept warm and protected from drafts. The room may be aired at intervals, but the windows should be kept closed in the interim.

The treatment described is the most effective way of aborting incipient coryza because it tends to overcome the vasomotor shock which initiates the usual cold.

COMMON COLDS AND ULTRAVIOLET RAYS

To the Editor:—A patient has called my attention to the article entitled "Conquering the Common Cold and Other Air Borne Infections" which appeared in the *New Republic*, Dec. 15, 1941. I should like your opinion as to the value of the new ultraviolet ray lamp mentioned in this article, with particular emphasis on its use in combating the germ of the common cold.

Ben H. Hollis, M.D., Louisville, Ky.

ANSWER.—William Firth Wells and Mildred Weeks Wells (*Am. J. Pub. Health* 28:343 [March] 1938) began work with the installation of ultraviolet ray lamps set up under competent and rigid medical control in order to determine their value in controlling the sanitary quality of the air, with the hope of reducing respiratory disease.

Studies are being conducted at the Henry Phipps Institute in Philadelphia and at the Cradle Society, Evanston, Ill. (*THE JOURNAL*, April 11, 1942, p. 1271), which it is hoped will aid in determining the usefulness of ultraviolet rays in sterilizing the air.

Since the virus presumed to be responsible for colds has not been isolated or recognized, definite evidence of the effect of ultraviolet rays in combating colds is not available.

The evidence thus far presented seems to indicate that ultraviolet ray barriers set up between the cribs of infants in nurseries may help prevent the transmission of respiratory infections from one baby to another. Whether the installation of ultraviolet ray lamps in crowded rooms or in the sickroom will aid in preventing the transmission of colds has not been determined.

LIVER THERAPY OF MUCOUS COLITIS

To the Editor:—I have heard that there is a new method of treating mucous colitis by parenteral injection of liver. I would appreciate any information you can give me on the subject.

M.D., New Jersey.

ANSWER.—There is no evidence at present that mucous colitis can be treated by parenteral injections of liver. Parenteral injections of liver have been used in cases of idiopathic ulcerative colitis with variable results. The only beneficial effect one could ascribe in cases of mucous colitis to the parenteral injection of liver would be to the possibility of the patient's having an added amount of vitamin B complex, which is contained in any good extract, particularly the crude type.

CHRONIC ACTIVE GLOMERULONEPHRITIS

To the Editor:—A man aged 24 has chronic interstitial nephritis (with symptoms of hypertension, edema, albuminuria, casts in the urine and anemia) and may be "headed for" uremia. What is the latest treatment for this condition?

Louis L. Dolinsky, M.D., Woodside, N.Y.

ANSWER.—Judging from the age of the patient and the symptoms, it may be assumed that the diagnosis of chronic interstitial nephritis signifies chronic active glomerulonephritis rather than the arteriosclerotic renal disease, or nephrosclerosis, secondary to essential hypertension. The association of edema and hypertension in a young person with nephritis constitutes the "mixed" type in which the edema is attributable to proteinuria and hypoproteinemia. If the nephritis has lasted long enough to produce cardiac insufficiency, by way of hypertension, the edema could be cardiac rather than renal. Treatment, of course, would vary correspondingly.

The management of a patient with chronic glomerulonephritis resolves into general and symptomatic measures. The general treatment includes giving an adequate diet for the maintenance of normal nutrition, taking precautions against exposure to infections of the respiratory tract, institution of bed rest even during minor colds and careful periodic examinations including tests of renal function and study of the sediment of concentrated urine. Foci of infection should be treated on the basis of their local importance rather than of their possible relation to the chronic renal process; otherwise the results will be disappointing if not actually harmful. The decision to eradicate a focus of infection is more logical when it can be ascertained that a flare-up of the nephritis definitely followed an acute localized infection.

The symptomatic treatment refers to the control of edema, anemia, hypertension and its sequelae. The foundation of the treatment of renal edema is a low salt intake. If this can be achieved, restriction of fluids becomes unnecessary. Bed rest is essential whenever there is more than slight edema. The diet should be normal except for the salt content and should contain 75 to 100 Gm. of protein, at least half of animal origin, including meat. Reduction of dietary protein is indicated only when the patient has severe renal insufficiency and is unable to eat. A blood urea or nonprotein nitrogen two or even three times normal is not incompatible with a good appetite and is not an indication for restriction of protein, especially when considerable proteinuria continues to act as a drain on body protein. If dietary protein is curtailed, adequate calories must be supplied as carbohydrate and fat in order to prevent loss of body tissue.

Of the many diuretics available, the acid-forming salts and the organic mercurials give the best results in the treatment of chronic renal edema. Potassium salts in full doses may induce excellent diuresis in patients who can tolerate them. The ordinary purine drugs are generally disappointing in renal edema. Acaia, as given intravenously, is not to be recommended for use in general practice. Before any powerful diuretic drug is employed it is essential to determine the level of renal function, because diuresis depends on the renal excretion of the drug and toxic effects are likely to follow retention of the drug. Mercury should not be given if the urea clearance is less than one third of normal or the maximum urinary specific gravity on an eighteen hour concentration test is less than 1.018, corrected for protein in the urine. If there is any question of cardiac insufficiency, digitalization should be carried out just as it would be in nonrenal edema, since low renal function is not a contraindication to the use of digitalis. The degree of diuresis will depend on the amount of edema, the level of renal function, the plasma albumin concentration and the efficiency of salt restriction. Minor residual edema of the legs may be controlled with elastic bandages.

Anemia in nephritis may be nutritional in origin or part of the toxic effect of renal insufficiency. In the former case, a good diet and a supplement of iron will usually improve the blood; in the latter, one may have to resort to repeated small blood transfusions whenever the hemoglobin level falls below 50 to 60 per cent. The slightest incompatibility of bloods may produce dangerous renal effects in preuremic patients.

Hypertension in chronic glomerulonephritis does not require treatment nor is it particularly responsive to the measures ordinarily employed in essential hypertension. However, the complications of hypertension in the form of encephalopathy and cardiac insufficiency can be treated in nephritic patients as in others. Low renal function renders the use of hypertonic solutions of sucrose, intravenously, questionable because of delayed excretion and noneffectiveness. Sedatives like bromides and barbitals which depend on urinary excretion should be given with caution, if at all.

POLYNEURITIS IN A WATCHMAKER

To the Editor:—A man aged 28, who had been working in a watch factory for the past several years, suddenly became ill, complaining of severe pain in one arm and then the other, and later of pain in the abdomen and legs. His temperature varied between 100 and 104 F. Later he had a bilateral wrist drop and wasting of the upper extremity. He was admitted to the hospital, where he remained for eight weeks before he died. Several diagnoses were made, such as polyneuritis, poliomyelitis and meningitis. A postmortem was performed and a diagnosis of infectious polyneuritis was made. While working in the watch factory the man came in contact with a solution of dilute cyanide, cream of tartar, alcohol and acetic acid, nickel chloride and nickel sulfate, copper cyanide, gold cyanide, silver chloride and silver cyanide. Is it not possible that the patient acquired polyneuritis as a result of his occupation, which through lowered resistance on account of his long illness became an infectious type and hastened his death? Are there such cases on record? Kindly send me reference material or advise where I can obtain this material.

William A. Lustusky, M.D., Mount Carmel, Pa.

ANSWER.—The preeminent but still minor occupational diseases of the watchmaker center about a variety of dyskinesias or cramps or trade neuroses akin to the better known "writers' cramp." These result from repetitive movements in manipulating small parts, usually metal, in watch parts production and assembly. To some extent the damage may be functional, but the possibility that a neuritis exists is recognized. While work disability may arise, such disability is limited to special operations and by no means is general. So localized are such injuries that it is only fabulous to conceive that such affairs might attain the severity described in this query. Of greater significance is the implication found in the query that this former workman was not a watchmaker but a plater and thus not subject to the dyskinesias mentioned. The question then becomes: Will the plating materials mentioned lead to a fatal polycneuritis? The answer must be made in the negative, and no such occurrences are found in authentic literature. Gold, silver, nickel and copper are not recognized as likely sources of systemic diseases after industrial exposures. Cyanides are highly toxic but do not induce the manifestations of the acute episode described. Cyanide gases constitute internal asphyxiants but are without selective action for peripheral nerve tissues. The well elevated temperature at onset militates in some measure against any chemical action. The concept that the wear and tear, of work lowered resistance might apply equally to large numbers of occupations and is scarcely tenable.

PITYRIASIS RUBRA PILARIS

To the Editor:—In a girl aged 13 there developed five months ago hard dry papules on the dorsal and ventral surfaces of the feet and hands. Within a few weeks the eruption became universal, with some sparing of the flexor surfaces of her arms. In most areas the papules have become confluent; the entire back and face are one dry red plaque partially covered with branny scales. The scalp presents a picture of moderately severe seborrheic dermatitis, "dandruff," with much scaling and some loss of hair. The nails are striated and the palms and soles are thickened. The patient is somewhat underweight, has not reached puberty but otherwise is in fair health, except that a few days ago mild bronchopneumonia developed. A dermatologist prescribed large doses of vitamin A and various external methods of treatment, including tar baths, frequent oil rubs and sulfur ointment. There has been a moderate amount of itching present since inception of the condition. This is apparently a case of pityriasis rubra pilaris. Please answer the following questions: Could this be a manifestation of a dermatosis due to a vitamin A deficiency, assuming that the girl comes from a well-to-do family and has had sufficient amounts of vegetables and dairy products in her daily diet? What is the cause of pityriasis rubra pilaris? Could there be a hormonal dysfunction, that is of the thyroid? What would you advise as to internal and external therapy?

Eugene J. Boros, M.D., Bethany, Ill.

ANSWER.—This is undoubtedly a case of pityriasis rubra pilaris. In recent years a disease of the skin has been reported in which follicular hyperkeratosis, the same pathologic appearance seen in pityriasis rubra pilaris, is present to a less degree. Numerous writers have described a condition in undernourished patients in the tropics and in the Orient in which a rough skin with follicular hyperkeratosis (phrynodermia, meaning toadskin) was associated with well established signs of vitamin A deficiency, such as xerophthalmia, keratomalacia and night blindness. More recently a similar disorder has been described as affecting white persons, children and adults, and under appropriate therapy the skin has been restored to normal. This condition usually affected persons of the underprivileged class or those who for some reason had undergone a rigid restriction of the diet. It seems well established on the basis of these reports and experiments that under certain conditions a deficiency of vitamin A provokes a characteristic response in the skin.

Microscopic studies made in cases of phrynodermia show a striking similarity in many respects to the microscopic picture

of pityriasis rubra pilaris. In 3 cases of pityriasis rubra pilaris reported by Brunsting and Sheard (*Dark Adaptation in Pityriasis Rubra Pilaris*, *Arch. Dermat. & Syph.* 43:42 [Jan.] 1941) the abnormally high levels of dark adaptation present were corrected promptly by the administration of large amounts of vitamin A. The response of the skin, however, was considerably delayed. Failure in response or a delayed response of the skin to a therapeutic test by means of the administration of large amounts of carotene or of vitamin A is only of relative value in determining the ultimate importance of a disturbance of vitamin metabolism in this peculiar disease entity.

In an article by Peck, Chargin and Sabotka (*Keratosis Follicularis, a Vitamin A Deficiency Disease*, *ibid.* 43:223 [Feb.] 1941) the authors state that patients with keratosis follicularis when given a normal diet, which apparently contains an adequate amount of vitamin A, are unable to maintain a normal vitamin A level in the blood because of either inability to absorb the required quantity of vitamin A from the gastrointestinal tract or inability to convert the provitamin A, carotene, into vitamin A. This will explain the reason for giving vitamin A in pityriasis rubra pilaris. The reference may explain why a girl on a normal diet should show a vitamin A deficiency.

The cause of the disease is unknown. It is a chronic benign process in the skin, runs a varied course and may show a familial trend. There is no evidence to show that there is a hormonal dysfunction of the thyroid. The treatment outlined by the dermatologist is excellent and should be continued.

BLEEDING FROM MUCOUS MEMBRANES CAUSED BY HEPARIN

To the Editor:—Hove cases been reported in which heparin has caused bleeding from the mucous membranes, namely the gums and the bowel? The following case was observed in our hospital: A woman aged 74 with hypertension and an apparently sound heart was operated on for partial intestinal obstruction and an enlarged, thickened gallbladder with a solitary stone. The stone was removed, and drainage of the gallbladder was instituted; distention, nausea, vomiting and constipation followed. About the fifth day, after the use of enemas and the Wengenstein suction apparatus, she was doing well, when thrombosis of the popliteal artery occurred. It was decided not to intervene. After the second day one ampule of heparin was administered in 500 cc. of dextrose solution. The clotting time was eight minutes after administration. The next day, a second ampule was given and the clotting time was five and one-half minutes. Twenty-four hours later two ampules were administered in 500 cc. of dextrose solution and the clotting time was over ten minutes. This was followed by bleeding from the gums and the bowel which lasted over twelve hours. The heparin seemingly had no effect on the condition of the leg, which gradually became more cyanotic, and the circulation became more impaired. The patient lived four or five days more before death, the heparin apparently having no effect for better or worse. I have read a report by an author who has given heparin until the clotting time was prolonged for nearly an hour with no bleeding.

M.D., New Jersey.

ANSWER.—Only a tentative answer can be given to this inquiry, because the dose of heparin is unknown and it is not known how soon after the administration of heparin the coagulation time was determined. Also the method used has not been stated. Ampules of different sizes and concentrations are on the market, but it may be assumed that a 10 cc. ampule, containing 100 mg. of heparin, was used. This dose is usually insufficient to maintain a coagulation time of ten to fifteen minutes during the entire day and night. However, when given suddenly, within a few minutes to one-half hour, it may raise the coagulation time to a dangerous level.

The reaction of patients to heparin differs a great deal. Some patients are much more sensitive to it than others. If the patient has a damaged liver, jaundice or a hemorrhagic tendency, because of a vitamin deficiency, bleeding will occur sooner. A single determination of the coagulation time may not give a true idea of the action of heparin, as it may be made before or after the peak of the coagulation curve has been reached. The only way to administer heparin safely is to determine the coagulation time at short intervals, probably every half hour, until the tolerance of the patient is known. There have been a number of reported and unreported cases of hemorrhage following the use of heparin both in the postoperative field and in unsuspected defects in the mucous membrane, such as a duodenal ulcer or the lesion of ulcerative colitis. The drug must be administered with a great deal of caution and with exact indications. Thrombosis of the popliteal artery seems to constitute a proper indication, except that one should not expect a restoration of circulation from its use, as heparin will not dissolve existing clots but will prevent further clotting proximal or distal to the existing thrombus.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE
DEPARTMENT, JANUARY-APRIL 1942

Titles have been listed or Abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1932. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner.

- Acta chirurgica Scandinavica. Stockholm.
Acta medica Scandinavica. Stockholm.
Acta obstetrica et gynecologica Scandinavica. Stockholm.
Acta radiologica. Stockholm.
Acta tuberculosa Scandinavica. Copenhagen.
American Heart Journal. St. Louis.
American Journal of Clinical Pathology. Baltimore.
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. Cincinnati.
American Journal of Orthodontics and Oral Surgery. St. Louis.
American Journal of Orthopsychiatry. Menasha, Wis.
American Journal of Pathology. Ann Arbor, Mich.
American Journal of Physiology. Baltimore.
American Journal of Psychiatry. New York.
American Journal of Public Health. New York.
American Journal of Roentgenol. and Radium Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonorr. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Review of Tuberculosis. New York.
Anais brasileiros de ginecologia. Rio de Janeiro.
Anais da Faculdade de medicina da Universidade de S. Paulo. São Paulo.
Anales de la Cátedra de patología y clínica de la tuberculosis. Buenos Aires.
Anales de la Sociedad mexicana de oftalmología y oto-rinolaringología. México, D. F.
Anesthesiology. New York.
Annales pédiatriques. Basel.
Annals of Internal Medicine. Lancaster, Pa.
Annals of Otolaryngology and Laryngology. St. Louis.
Annals of Surgery. Philadelphia.
Archiv für klinische Chirurgie. Berlin.
Archiv für Krebslaufforschung. Dresden.
*Archives of Dermatology and Syphilology. A. M. A., Chicago.
Archives of Disease in Childhood. London.
Archives de l'Institut Pasteur de Tunis.
*Archives of Internal Medicine. A. M. A., Chicago.
Archives Internationales de pharmacodynamie et de thérapie. Ghent.
*Archives of Neurology and Psychiatry. A. M. A., Chicago.
*Archives of Ophthalmology. A. M. A., Chicago.
*Archives of Otolaryngology. A. M. A., Chicago.
*Archives of Pathology. A. M. A., Chicago.
Archives of Physical Therapy. Chicago.
*Archives of Surgery. A. M. A., Chicago.
Archivos argentinos de enfermedades del aparato respiratorio y tuberculosis. Buenos Aires.
Archivos argentinos de pediatría. Buenos Aires.
Archivos de pediatría del Uruguay. Montevideo.
Arquivos brasileiros de oftalmologia. São Paulo.
Arquivos do Serviço de assistência a psicopatas do estado de São Paulo.
Boletín de los hospitales. Caracas, Venezuela.
Boletín de la Liga contra el cáncer. Havana.
Boletín de la Sociedad de obstetricia y ginecología de Buenos Aires.
Bollettino della Società Italiana di microbiologia. Milan.
Brain. London.
Brasil-medico. Rio de Janeiro.
British Heart Journal. London.
British Journal of Dermatology and Syphilis. London.
British Journal of Experimental Pathology. London.
British Journal of Ophthalmology. London.
British Journal of Radiology. London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Medical Journal. London.
Bulletin of the Johns Hopkins Hospital. Baltimore.
Bulletin of the Naval Medical Association. Tokyo.
Bulletin of the New York Academy of Medicine. New York.
California and Western Medicine. San Francisco.
Canadian Medical Association Journal. Montreal.
Canadian Public Health Journal. Toronto.
Cancer Research. Baltimore.
Chinese Medical Journal. Peking.
Connecticut State Medical Journal. Hartford.
Delaware State Medical Journal. Wilmington.
Dermatologica. Basel.
Deutsche medizinische Wochenschrift. Leipzig.
Deutsche Zeitschrift für Chirurgie. Berlin.
Deutsches Archiv für klinische Medizin. Berlin.
Día médico. Buenos Aires.
Diseases of the Eye, Ear, Nose and Throat. Chicago.
Edinburgh Medical Journal.
Endocrinology. Springfield, Ill.
Folia pharmacologica japonica. Kyoto.
Gann. Tokyo.
Gastroenterologia. Basel.
Geneeskundig tijdschrift voor Nederlandsch-Indië. Batavia.
Guy's Hospital Reports. London.
Hawaii Medical Journal. Honolulu.
Helvetica medica acta. Basel.
Hospital. Rio de Janeiro.
Illinois Medical Journal. Chicago.
Irish Journal of Medical Science. Dublin.
Jahresbericht des Kurashiki-Zentralhospitals. Kurashiki.
Journal of Allergy. St. Louis.
Journal of the Arkansas Medical Society. Fort Smith.
Journal of Bone and Joint Surgery. Boston.
Journal of Clinical Endocrinology. Springfield, Ill.
Journal of Clinical Investigation. New York.
Journal of Endocrinology. London.
Journal of Experimental Medicine. New York.
Journal of the Florida Medical Association. Jacksonville.
Journal of Hygiene. London.
Journal of Immunology. Baltimore.
Journal of the Indiana State Medical Association. Indianapolis.
Journal of Industrial Hygiene and Toxicology. Baltimore.
Journal of Infectious Diseases. Chicago.
Journal of Investigative Dermatology. Baltimore.
Journal of the Iowa State Medical Society. Des Moines.
Journal of the Kansas Medical Society. Topeka.
Journal of Laboratory and Clinical Medicine. St. Louis.
Journal-Lancet. Minneapolis.
Journal of Laryngology and Otolaryngology. London.
Journal of the Maine Medical Association. Portland.
Journal of the Medical Association of the State of Alabama. Montgomery.
Journal of the Medical Association of Georgia. Atlanta.
Journal of the Medical Society of New Jersey. Trenton.
Journal of Mental Science. London.
Journal of the Michigan State Medical Society. Muskegon.
Journal of the Missouri State Medical Association. St. Louis.
Journal of the National Cancer Institute. Washington, D. C.
Journal of Nervous and Mental Disease. New York.
Journal of Neurophysiology. Springfield, Ill.
Journal of Nutrition. Philadelphia.
Journal of Obstetrics and Gynecology of British Empire. Manchester.
Journal of the Oklahoma State Medical Association. Oklahoma City.
Journal of Pathology and Bacteriology. Edinburgh.
Journal of Pediatrics. St. Louis.
Journal of Pharmacology and Experimental Therapeutics. Baltimore.
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The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "SS," Student Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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As.—Association
Col.—College
Conf.—Conference
Cong.—Congress
Cont.—Convention
Dist.—District
Hosp.—Hospital
Internat.—International
M.—Medical
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